THE IRON TRADE REVIEW

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Prices Advance in Spite of Conservative Policy

Which is Receiving Strong Support—Decrease in Pig Iron Buying, But No Indications of Weakness—Prompt Coke Scarce

Conservative policies are being strongly supported and price advances are made cautiously. Nevertheless, a number of higher quotations on finished products have been announced within a few days and recent minimum quotations on pig iron have disappeared in nearly all parts of the country. In some cases, when advances on finished materials have actually been made, there has been no official announcement. Orders for new business, especially for delivery after Jan. 1, are being taken in a very conservative manner and every precaution is being exercised to avoid speculative buying. The pressure for deliveries continues very strong and the car shortage in some sections has become more embarrassing.

Pig Iron

Considerable less activity is noted in pig iron in leading centers, but the strength of the market is fully maintained and the tendency of quotations is still upward. It is estimated that more than 160,000 tons of Bessemer and basic have been obtained by a few consumers in the Pittsburgh district during the past two weeks. The Allegheny Steel Co. has just contracted for about 20,000 tons of basic for delivery during the first six months of next year. Eastern Pennsylvania and Virginia foundry and lower grades have again been advanced from 25 to 50 cents, and basic in the east promises to settle at about $1 above the last sales. There is a wide range in quotations in southern Ohio, where some resale iron has appeared. The Pennsylvania railroad is inquiring for 1,500 to 3,000 tons of forge, 500 to 1,000 tons of No. 2X and 600 to 1,200 tons of charcoal pig iron for the first quarter of next year.

Structural Material

Owing to the inability of mills to give anything like prompt delivery on structural material, new projects are not coming out in large volume. When reasonably prompt deliveries can be assured, however, by structural shops, orders are easily taken. Structural orders in Chicago during the past week amounted to 8,400 tons, including 4,500 tons from the Commonwealth Edison Co., for a substation at Chicago. The steel for the Detroit-Superior bridge, Cleveland, 4,000 tons, of which one-third will be nickel steel, will be furnished by the Carnegie Steel Co. The erecting will be done by the King Bridge Co. An Ohio maker of oil tanks is inquiring for 30,000 tons of plain material for extended delivery.

Coke

Although production of coke in the Connellsville region has increased, it is not equal to the demand, and there is a scarcity of both foundry and furnace grades. Some high prices are being asked, as high as $4, ovens, having been paid for small lots of spot foundry fuel and $3.50 for furnace coke for prompt shipment. A leading eastern consumer paid $3.40, ovens, for a lot of spot Connellsville furnace coke. Many consumers are finding it difficult to place orders at any price.

Crude Steel

Crude steel is very scarce and open-hearth billets have been sold as high as $28, Pittsburgh. The outlook is that some independent sheet mills will have difficulty in covering for their requirements of sheet bars for the first quarter of next year. Special forging billets are now selling at from $35 to $40, eastern mills, and one round lot for first half delivery was taken at the maximum price. Consumers are ordering whenever they can do so and do not hesitate to pay high prices.

Price Advances

Quotations on nuts and bolts have again been advanced 5 per cent and rivets $2 per ton. The recent rapid advances are attributed by makers to the strong demand and the higher quotations on bars. In sympathy with steel bars, steel bands have advanced in price and are now quoted at 1.40c and 1.45c, Pittsburgh, for carload lots. Prices of sheets have been advanced $2 per ton and none of the larger mills will promise shipment before Jan. 1. Premiums are freely paid for early delivery.

Iron Ore

Diaquiri, Cuba, iron ore has been advanced from 7¼ cents to 7¾ cents per unit, Philadelphia, equivalent to about 30 cents a ton. Users of Lake Superior ores have been inquiring into the market for next year and one reservation of 150,000 tons of ore for next year has been made. The lake iron ore movement continues very heavy.

PITTSBURGH

More Advances in Finished Products

Office of THE IRON TRADE REVIEW,
2148-49 Oliver Bldg., Oct. 15.

Nearly all lines of finished iron and steel products have experienced advances in price values this week, notwithstanding the fact that leading manufacturers endeavored to maintain prevailing quotations of a week or ten days ago. Men in official capacities assure the trade, however, that there will be no runaway market, and many claim no further advances will be announced for some time.

Steel bars are now being quoted at 1.40c to 1.45c, representing an advance of $1 a ton. Steel plates and structural shapes also have been advanced $1. All grades of sheets have been advanced $2 a ton. The scarcity of semi-finished steel products is making it possible for sellers to obtain almost any price they care to ask. Steel bands have advanced $1 a ton, in sympathy with steel bars. Rivets have stiffened considerably, and an early advance in the values of bolts and nuts is expected.

The pig iron market has not been so excited, and buying has fallen off, although no weakness is displayed. Coke is scarce, and consumers are offering premium prices for prompt fuel.

Pig Iron.—Buying has not been so heavy this week, and the market is not so excited as it had been for almost a fortnight. Quotations remain practically as they stood a week ago on all grades except Bessemer and gray forge. Minimum quotations on these have disappeared. The Allegheny Steel Co., this city, early this week obtained a round lot of basic, estimated at about 20,000 tons, for shipment the first six months of the new year. The bulk of this tonnage was obtained at $16, valley furnace, and the remainder at $16.10, valley. Basic, in round lots, has sold as high as $16.25, valley. Gray forge is held firmly at $15.50, valley, and it is understood that small lots have sold at above that figure. The National Tube Co. this week entered the market for a round tonnage of gray forge for prompt shipment to plants in this city. Foundry iron has sold as high as $16.50, valley, for both prompt and next year's shipment, although it still is believed possible to obtain this grade at $16, valley. Rather heavy tonnages of foundry iron are involved in numerous small inquiries. Malleable continues to be quoted at $16 to $16.25, valley, although small lots have sold as high as $16.50, valley furnace. Difficulty in obtaining coke has prevented several idle blast furnaces from relighting. Quotations for prompt and first quarter iron follow:

(Remainder of Year and First Quarter.)

Bessemer, valley	$17.00
Bessemer, Pittsburgh	17.90
Basic, valley	16.00 to 16.25
Basic, Pittsburgh	16.90 to 17.15
No. 2 foundry, valley	16.00 to 16.50
No. 2 foundry, Pittsburgh	16.90 to 17.40
Gray forge, valley	15.50
Gray forge, Pittsburgh	16.40
Malleable, valley	16.00 to 16.25
Malleable, Pittsburgh	16.90 to 17.15

Ferro-Alloys. — Leading sellers of ferro-manganese continue to quote $61, Baltimore, for forward shipment, but no sales have been announced above $59.50, Baltimore. As high as $75, Baltimore, is being asked for prompt delivery. Ferro-silicon, 50 per cent, is quoted at $75, Pittsburgh, for both prompt and forward delivery, although sellers are not booking tonnage for shipment beyond Jan. 1. Twelve to 13 per cent ferro-silicon is now quoted at $25, furnace; 11 to 12 per cent at $24; 10 to 11 per cent at $23, and 9 to 10 per cent is being quoted at $22, furnace.

We quote 80 per cent ferro-manganese at $61 to $75, Baltimore, for prompt delivery and $59.50 to $61 for forward shipment. The freight rate from Baltimore to Pittsburgh is $1.95 per ton.

Fifty per cent ferro-silicon is quoted nominally at $75, Pittsburgh, for prompt and forward delivery; 12 to 13 per cent, $25; 11 to 12 per cent, $24; 10 to 11 per cent, $23; 9 to 10 per cent, $22, f. o. b. Globe, Jisco and Ashland furnaces. The freight rate to Pittsburgh is $1.90. The foreign grades are held at $1 or more a ton over domestic prices.

On ferro-titanium we quote 8 cents per pound for carload lots; 10 cents per pound for 2,000 pound lots and over, and 12½ cents per pound in lots up to 2,000 pounds.

Plates.—Steel plates are now quoted at 1.45c and 1.50c, the lower quotation being offered by the leading interest. Some of the independent mills are asking as high as 1.55c, and are booking small tonnage at that figure. The Philadelphia & Reading railroad has placed an order with the Cambria Steel Co., Johnstown, Pa., for 1,000 steel hopper cars, and the American Car & Foundry Co. will build 1,500 cars of the similar type for the same company. The Pittsburgh Crucible Steel Co., Pittsburgh, plans to build over 20 barges, to haul coke to the Midland plant on the Ohio river. The contract for steel, involving about 1,500 tons, has been placed with the American Bridge Co. The contract for riveted steel plates, to be used in building an aqueduct at Los Angeles, is expected to be awarded late today. About 8,200 tons of steel are involved. Several inquiries for cars are pending, and it is probable contracts will be placed this week. Revised quotations follow:

Tank plates, ¼ inch thick, 6¼ to 100 inches, 1.45c to 1.50c. Extras are as follows per 100 pounds: Boiler and flange steel plates, 0.10c; A. B. M. and ordinary firebox steel plates, 0.20c; still bottom steel, 0.30c; marine steel, 0.40c; locomotive firebox steel, 0.50c; all sketches excepting straight taper plates varying not more than 4 inches in width at ends, narrowest end being not less than 30 inches 0.10c; circles, 0.20c. Plates in widths over, 100 inches up to 110 inches 0.05c; over 110 inches up to 115 inches, 0.10c; over 115 inches up to 120 inches, 0.15c; over 120 inches up to 125 inches, 0.25c; over 125 inches up to 130 inches, 0.50c; over 130 inches, 1c. Gages under ¼ inch to and including 3-16-inch plate on thin edge, 0.10c; under 3-16 and including No. 9, 0.25c. Five cents extra for less than carloads. Terms net cash in 30 days.

Sheets.—As had been expected by the trade for some time, manufacturers of black, blue annealed and galvanized sheets have advanced quotations. Black, including tin mill sizes, and galvanized products, have been advanced $2 a ton, and No. 28 gage black sheets are now quoted at $2.25; No. 28 gage tin mill size, at $2.20, and No. 28 gage galvanized at $3.40. Blue annealed products were advanced a week ago Thursday $1 a ton, and early this week mills announced no further tonnage would be booked at less than $1.65, which means, in reality, an advance of $2 a ton since a week ago. None of the most important mills is able to promise shipments before next year, and premiums are obtained where rather prompt delivery is possible. Demand

has been extremely heavy and one of the leading manufacturers booked more tonnage the first 12 days of this month than ever before in a corresponding period. Revised quotations follow:

Flat Sheets.

Black Sheets.—Nos. 10-12 gage, $1.90 per 100 pounds; Nos. 13-14 gage, $1.95; Nos. 15-16 gage, $2.00; Nos. 17-21 gage, $2.05; Nos. 22-24 gage, $2.10; Nos. 25-26 gage, $2.15; No. 27 gage, $2.20; No. 28 gage, $2.25; No. 29 gage, $2.30; No. 30 gage, $2.40.

Tin mill sizes, Nos. 15-16 gage, $2.00 per 100 pounds; Nos. 17-21, gage, $2.05; Nos. 22-24 gage, $2.10; Nos. 25-27 gage, $2.15; No. 28 gage, $2.20; Nos. 29-30 gage, $2.25; Nos. 30½-31 gage, $2.30; No. 32 gage, $2.35.

Blue Annealed.—Nos. 3-8, $1.60 per 100 pounds; Nos. 9-10, $1.65; Nos. 11-12, $1.70; Nos. 13-14, $1.75; Nos. 15-16, $1.85.

Galvanized.

Nos. 10-11 gage, $2.40 per 100 pounds; Nos. 12-14 gage, $2.50; Nos. 15-16 gage, $2.65; Nos. 17-21 gage, $2.80; Nos. 22-24 gage, $2.95; Nos. 25-26 gage, $3.10; No. 27 gage, $3.25; No. 28 gage, $3.40; No. 29 gage, $3.55; No. 30 gage, $3.70.

Roofing Sheets.

Net extras on all gages per 100 pounds. Corrugated 2-inch, 2½-inch, 3-inch and 5-inch corrugation, 5c; 2 V crimped without sticks, 5c; corrugated 1¼-inch corrugation, 10c; 3 V crimped without sticks, 10c; pressed standing seam with cleats, 15c; plain roll roofing with or without cleats, 15c.

Painted Roofing.

12 to 18 gage, inc., 5c; 19 to 24 gage, inc., 10c; 25 to 28 gage inc., 15c.

Tin Plate.—Mills are booking heavy tonnages for shipment next year, and so far as can be learned the prevailing quotation, $3.60, is being firmly maintained. Uncertainty regarding the price of raw material for next year has caused some of the mills to hesitate about accepting tonnage. The scarcity of tin bars is affecting some mills. The prevailing quotations follow:

Coke tin plate, 100-pound basis, 14 x 20. $3.60, f. o. b. mill, Pittsburgh district.

Rails and Track Material.—All the mills in this district are operating at capacity, despite the fact that this is normally the quietest season of the year. The Cambria Steel Co. has taken several large orders, although definite announcement regarding particulars has not been made. Eastern roads have been buying heavy tonnages of spikes, and the $1.80 quotation has been firmly established. Angle bars are stiffening, although the 1.50c quotation has not been withdrawn. Track bolts have advanced in price $2 a ton, and as high as 2.25c, Pittsburgh, has been paid for a round tonnage of track bolts for prompt shipment. Rails are quoted as follows, with the base price on open-hearth standard sections 1.34c per pound at the mill:

Fifty-pound and heavier, 1.25c per pound; carloads and less than 500 tons, 1.34c per pound; light rails on base weight of 40 to 45 pounds, 1.25c, the schedule on the other weights being irregular and subject to negotiations; angle bars for standard sections, 1.50c, Pittsburgh; track bolts, 2.10c to 2.25c, Pittsburgh.

Railroad Spikes.

4½, 5 and 5½ and 9-16	$1.80
3, 3½, 4, 4½ and 5 x ½	.10
3½, 4 and 4½ x 7-16	.20
3, 3½, 4 and 4½ x ½	.30
2½ x ½	.40
2½, 3 and 3½ x 5-16	.60
2 x 5-16	.80

Billets and Sheet Bars.—Several sales of semi-finished steel products have been made this week, and as a general rule sellers are obtaining whatever price they care to ask, due to the acute scarcity. For this reason it is doubted whether sales actually represent the market. A round tonnage of open-hearth 4 x 4 billets has sold as high as $28, Pittsburgh, and a sale of open-hearth sheet bars at the same figure is noted. As high as $40, and even higher, has been offered for forging billets, and a sale was made a few days ago at $34, maker's mill. Consumers who have not covered first quarter requirements are greatly concerned in the semi-finished steel situation. It is impossible to verify sales said to have been made for shipment beyond January. The following quotations are believed to represent the market:

Bessemer 4 x 4 billets with 0.25 carbon and less are quoted at $26.00, with the usual extra for size and analysis, and open-hearth rolling billets, $26.50. Bessemer sheet and tin bars are quoted at $27.00 and open-hearth sheet bars are quoted $28.00, f. o. b. Pittsburgh and Youngstown for fourth quarter, with full freight to destination added. Forging billets are quoted at $32.00, Pittsburgh.

Hoops and Bands.—In sympathy with steel bars, steel bands have advanced in price and are now quoted at 1.40c and 1.45c, Pittsburgh, for car load lots. Hoops continue to be quoted at 1.45c to 1.50c, although the minimum figure is rapidly disappearing. New demand for both products is light, but specifying is liberal. Revised quotations follow:

Hoops in carload lots, 1.45c to 1.50c; Pittsburgh; in less than carload lots, 1.50c to 1.55c; bands 1.40c to 1.45c, base, with net extras, as per standard steel.

Merchant Bars.—The minimum quotation on steel bars has disappeared, although official action to this effect has not been taken. It now is impossible to obtain tonnage at less than 1.40c, and several mills are quoting 1.45c. None of the leading manufacturers is in a position to make delivery before the latter part of the first quarter, and some makers are booked well into the second quarter. Iron bars have stiffened, and most mills are refusing to quote below 1.55c. Shafting is being firmly held at 60 per cent off for car loads, although some jobbers are in a position to shade this discount. Premiums of $2, $3 and $4 are being paid on steel bars for early shipment. Revised quotations follow:

Common iron bars, 1.50c to 1.55c, Pittsburgh; Bessemer and open-hearth steel bars, 1.40c to 1.45c; plow and cultivator, 1.40c to 1.45c; channels, angles, zees, tees, under 3 inch, 1.50c to 1.55c, all f. o. b. mill. The following differentials are maintained on steel: Less than 2,000 pounds and not less than 1,000 pounds of a size, 0.15 advance, less than 1,000 pounds, 0.35. Cold rolled, and ground shafting, 60 per cent off in carloads and 55 per cent in less than carloads delivered in base territory.

Muck Bar.—In the absence of sales, we continue to quote muck bar at nominally $31, Pittsburgh. There has been considerable new demand, but no sales are reported.

Bolts, Nuts and Rivets. — Leading makers of rivets in this district today announced new quotations on structural and boiler rivets, showing an advance of $2 a ton over a fortnight ago. Bolt and nut makers are expected to send out new discount cards this week, showing advances of 5 per cent or more. The recent advance in the price value of steel bars, combined with the unusually heavy demand, is responsible for the new quotations on those products. Revised quotations follow:

Rivets

Button head structural rivets, $2.00; cone head boiler rivets, $2.10.

Bolt and Nut Discounts

Carriage bolts, ⅜ x 6 inches, smaller and shorter, cut threads, 75, 10 and 2½; larger and longer, 70, 10.

Machine bolts with hot pressed nuts; ⅜ x 4 inches, smaller and shorter, rolled, 75, 10, 10 and 2½; cut, 75, 10 and 7½; larger and longer, 70, 10 and 5.

Gimlet and cone point lag or coach screws, 80 and 12½.

Hot pressed square, blank or tapped nuts, $5.90 off list; hot pressed hexagon blank or tapped, $6.55.

Cold pressed C. & T. square, blank or tapped, $5.90 off; hexagon, blank or tapped, ⅝-inch and larger, $6.85 off; smaller than ⅝-inch, $7.45 off.

Structural Shapes.—No large structural contracts are reported this week. Fabricators are unable to make shipments in less than three months, in many instances, and shipments are becoming more deferred. Better prices are being obtained than was the case several months ago. Interest is taken in shops to be erected by the government at Balboa in connection with the Panama canal project, and bids on these buildings are expected to be opened in ten days or two weeks. Several other important inquiries are pending. Structural material has advanced during the last week and it is impossible to place tonnage at less than 1.45c. Revised quotations follow:

Beams and channels, 15 inches and under, zees, 1.45c to 1.50c; tees, 1.50c to 1.55c;

angles, from 3 to 6 inches, 1.45c to 1.55c; over 6 inches, 1.55c to 1.60c; universal and sheared, 1.45c to 1.50c.

Merchant Pipe.—Several important inquiries are now before the trade, and it is probable that at least a couple of these will be closed this week. One inquiry calls for 75 miles of 16-inch pipe for shipment to points in Ohio; another calls for 70 miles of 4-inch pipe for West Virginia shipment, and two indefinite inquiries, one for 50 miles and the other for 60 miles, are pending. All pipe makers are badly deferred in shipments and a few manufacturers are practically out of the market. The Reading Iron Co., Reading, Pa., has issued a new card on iron pipe, showing a re-classification of sizes, similar to the revised list announced by the National Tube Co. a month or so ago. It shows slight advances in some sizes. The new card has not been generally adopted. Official discounts to jobbers, subject to the usual preferential discount to the large buyer, are as follows:

Iron and Steel Pipe Basing Prices

STEEL.

	Butt.		Lap.	
	Black.	Galv.	Black.	Galv.
⅛, ¼ and ⅜ inch.	72	52	..	..
½ inch	76	66	..	..
¾ to 3 inch	79	71	..	..
2 inch	..	..	76	68
2½ to 6 inch	..	..	78	70
7 inch to 12 inch	..	..	76	66
13 to 15 inch	..	..	53	..
Extra Strong, Plain Ends.				
⅛, ¼ and ⅜ inch.	68	58	..	..
½ inch	73	67	..	..
¾ to 1½ inch	77	71	..	..
2 to 3 inch	78	72	..	..
2 inch	..	..	74	66
2½ to 4 inch	..	..	76	68
4½ to 6 inch	..	..	75	67
7 to 8 inch	..	..	68	58
9 to 12 inch	..	..	63	53
Double Extra Strong Plain Ends.				
½ inch	63	57	..	..
¾ to 1½ inch	66	60	..	..
2 to 2½ inch	68	62	..	..
2 inch	..	..	64	58
2½ to 4 inch	..	..	66	60
4½ to 6 inch	..	..	65	59
7 to 8 inch	..	..	58	48

IRON.

⅜ inch	67	51	..	..
½ inch	70	57	..	..
¾ to 1½ inch	73	62	..	..
2 and 2½ inch	74	63	..	..
2 inch	..	..	70	61
2½ to 4 inch	..	..	72	64
4½ to 6 inch	..	..	71	63
7 to 12 inch	..	..	69	56
Extra Strong Plain Ends, Card Weight.				
⅜ inch	64	53	..	..
½ inch	68	61	..	..
¾ to 1½ inch	72	63	..	..
2 and 2½ inch	73	64	..	..
2 inch	..	..	67	61
2½ to 4 inch	..	..	71	64
4½ to 6 inch	..	..	70	63
7 to 8 inch	..	..	64	54
9 to 12 inch	..	..	59	48
Double Extra Strong Plain Ends, Card Weight.				
½ inch	58	50	..	..
¾ to 1½ inch	61	53	..	..
2 and 2½ inch	63	55	..	..
2 inch	..	..	56	50
2½ to 4 inch	..	..	61	55
4½ to 6 inch	..	..	60	54
7 and 8 inch	..	..	53	43

Plugged and reamed pipe is furnished at 2 points higher price, either butt or lap weld.

The above discounts are for full weight pipe, subject to a variation of 5 per cent. merchant pipe, when specified, being furnished up to 6 inches at one point higher discount (lower price).

Boiler Tubes.—Makers of boiler tubes are more concerned about shipments than new business, as a general rule. Specifying continues heavy and considerable new demand is reported. The following discounts prevail, although some makers are quoting $2 a ton above this list:

	Steel.	Iron.
1½ inch	..	..
1¾ to 2¼ inch	62	47
2½ inch	64½	52
2¾ to 3¼ inch	69½	54½
3½ to 4½ inch	72	57
5 and 6 inch	64½	..
7 to 13 inch	62	..

To destination east of Mississippi river will be sold at delivered discount for carloads lowered by 2 points, for lengths 22 feet and under; longer lengths, f. o. b. Pittsburgh. Usual extras to jobbers and boiler manufacturers.

Wire.—The Jones & Laughlin Steel Co., independent of other manufacturers, advanced wire products $1 a ton, Oct. 10, and is now quoting nails at $1.75 and wire at $1.55. The leading interest has announced new differentials on galvanized products, showing an advance of $2 a ton. Galvanized fence staples, galvanized fence wire, galvanized wire, etc., are affected. That the price values announced by the Jones & Laughlin company will be adopted is the belief entertained by the trade. Specifying continues heavy and agricultural interests are booking tonnage for shipment next year, on the $1.75 base for nails. Following are the revised quotations:

Wire nails, jobbers' carload lots, $1.70; retailers' carload lots, $1.75 to $1.80; cut nails (western makers), jobbers' carload lots, $1.70, painted barb wire, jobbers' carload lots, $1.70 to $1.75; retailers' carload lots, $1.50 to jobbers in carloads, $1.50 to $1.55; and to dealers, in carloads, $1.55 to $1.60; polished staples, $1.70 to $1.75; galvanized staples, $2.10.

Wire Rods.—A sale of more than 1,000 tons of open-hearth wire rods at $28 was noted a few days ago, and another round tonnage of high carbon rods sold at $28.50, Pittsburgh, the end of last week. We now quote Bessemer and open-hearth rods at $28 and $29, Pittsburgh, although leading makers are refusing to shade the maximum quotation.

Coke.—Although no large sales have been reported, both furnace and foundry cokes have been stiffening this week. As high as $4 ovens, has been paid for small lots of prompt foundry fuel, and $3.50, ovens, has been obtained for small tonnages of furnace coke for prompt shipment. A central western consumer, five or six days ago, paid $3.75, ovens, for a round tonnage of standard foundry fuel to be shipped the remainder of this month and the early part of November. Within the last week or ten days about 48,000 tons of furnace fuel, for shipment during 1913, has sold at $2.75, ovens. Several leading sellers are asking as high as $4.25, ovens, for foundry coke and $3.50 for furnace fuel, for prompt shipment. Despite the fact that production in the Connellsville regions has steadily increased for several weeks, the supply does not equal the demand. The Connellsville *Courier*, for the week ending Oct. 5, says production gained 15,574 tons over the week before, the merchant ovens making the bigger gain. Shipments gained 483 cars. The shortage of box cars has made it necessary for manufacturers to ship foundry coke in rack cars, but little complaint is heard. Quotations follow:

Connellsville furnace	$3.00 to 3.50
Connellsville furnace contract	2.65 to 2.75
Connellsville foundry	3.50 to 4.00
Connellsville foundry contract	3.50 to 3.75

Old Material. — The market for heavy melting steel continues excited, and it was claimed today that $16.25 has been paid for small tonnage of this stock, but this report could not be verified. Dealers are asking as high as $16.50. In sympathy with heavy melting material, all other grades of iron and steel scrap have advanced. Malleable has been selling at $1 a ton above the prevailing quotation of a week ago, and low phosphorus has advanced to $18.50, which is $1 a ton more than sellers could obtain last week. Revised quotations follow:

Heavy melting scrap	$16.00
Rerolling rails	16.50 to 16.75
Malleable	14.00 to 14.50
Bundled sheet scrap	12.50 to 13.00
Iron axles	25.00 to 26.00
Old iron rails	16.50 to 16.75
Stove plate	11.00 to 11.50
No. 1 wrought scrap	15.25 to 15.75
Old car wheels	15.75 to 16.25
Low phosphorus	18.50 to 19.00
Machine shop turnings	11.00 to 11.50
Cast borings	10.00 to 10.50
No. 1 cast scrap	14.00 to 14.50

Livingstone Channel Opening

The Livingstone channel at the mouth of the Detroit river will be opened to navigation to downbound vessels on Oct. 19. The first steamer to pass through will be the bulk freighter Livingstone, and it is planned to have the president of the Lake Carriers' Association, in whose honor the channel is named, take her through. The Livingstone will be followed by a procession of government vessels, excursion boats and other craft. The excursion steamer Britannia has been chartered to carry a number of invited guests and the occasion will be marked with due ceremony.

CHICAGO

Western Railroads Buying Heavily

Office of THE IRON TRADE REVIEW,
1328 Monadnock Blk., Oct. 15.

Western railroads have continued their heavy buying of rails and track fastenings during the week, and the tonnage is said to have reached a total in excess of all previous records. One of the leading independent producers in this territory, as well as the leading interest, is now sold up through the first half on all material except a limited tonnage of sheets. A part of this business was taken on a basis of 1.45c, Pittsburgh, for steel bars, and 1.50c, Pittsburgh, for shapes. Obtaining the latter material in this market now approaches the impossible except from eastern mills which have a limited tonnage for first half delivery to dispose of. The same conditions maintain with regard to plates and car builders are having increasing difficulty in covering for their requirements. Prices on all finished lines are very buoyant, and tendencies toward advances are evident in spite of continued efforts on the part of leading producers to avoid excessively high quotations.

Pig Iron.—Southern iron in this market is now firm at a minimum of $14, Birmingham, for any delivery. One southern furnace interest is now holding at $14.50, but no sales have been made at that figure. A slackening of inquiry for southern iron is reported. Some spot inquiry, however, is still evident, which is placed in some cases at a premium over the current quotations. Although all northern producers are now quoting $17.50 at the furnaces for northern No. 2, they are in a position to shade prices somewhat on very desirable tonnages. Inquiry for northern iron appears to be heavier than that for southern, those in the present market aggregating at least 20,000 tons. Sales were made during the week totaling about 10,000 tons, principally on a basis of $17.50, f. o. b. Chicago. The leading interest is quoting $17.50 at the Bayview furnaces, but with higher quotations at Chicago is expected to advance. It is felt that the price to Milwaukee melters should approximate the Chicago quotation plus the freight.

Considerable strength has developed in the market for Jackson county 8 per cent, due in part to reported shortages of stocks. A sale of 500 tons made during the week included 150 tons for delivery during the remainder of the year, all on a basis of $19 at the furnace. Differentials on the grades of all irons are being maintained strictly and in some cases premiums are being obtained. Among the sales of northern iron is noted 300 tons of No. 3 northern at $17.25, local furnace.

The following prices represent the market for Chicago delivery, except northern foundry and malleable Bessemer, which are quoted f. o. b. local furnaces:

	Rest of year.	First quarter.
Lake Superior Charcoal	$18.75	$19.25
Northern foundry No. 2	17.50	17.50
Southern foundry No. 2	18.35	18.35
South'n Silveries, 5 per cent sil.	19.35	.....
Jackson co. silv'r's 8 per cent.	20.40	21.40
Malleable Bessemer	17.00	17.00
Alabama basic	18.35	.....

Merchant Bars.—Both the leading interest and the independents are well sold up for the first half on steel bars. One of the most prominent independents in this district can take no more business for that period and others are full for the first quarter and not booking tonnage for the second quarter. Bar iron is very strong at 1.50c, with some business being placed at higher figures, and the delivery situation is becoming even worse. The leading interest is out of the market for the first half on steel bars and will be so until bookings for the second half are made. The independent producer mentioned took considerable tonnage recently for the second quarter at 1.45c, Pittsburgh, for bars and 1.50c for shapes.

We quote, f. o. b. Chicago, as follows:

Bar iron, 1.50c, hard steel bars, rerolled, 1.45c to 1.50c; soft steel bars, bands and small shapes, 1.58c; hoops, 1.58c to 1.63c; smooth finished machinery steel, 1 inch and larger, 1.78c; shafting 60 per cent off list for carload lots, 55 per cent off for less than carloads.

On iron and steel from local stock we quote as follows:

Bar iron, 1.90c per pound base; soft steel bars, 1.90c per pound base; soft steel hoops, 2.20c, full extras.

Structural Material. — Conditions prevailing in the market for this material are on a parallel with those for bars. The independent producers as well as the leading interest are practically out of the market for the first half of next year. On account of the impossibility of obtaining mill deliveries combined with the shortage in store material many large projects continue to be held up until the situation is clarified.

Structural contracts placed during the week total 8,471 tons. Of this the leading interest has taken 4,500 tons from the Commonwealth Edison Co., for a sub-station at Fisk street, Chicago, and 510 tons from the Chicago, Burlington & Quincy Railroad Co., for deck plate girder spans. The Wisconsin Bridge Co. has taken 130 tons from the Chicago, Milwaukee & Puget Sound Railway Co., for a bridge over Silver Bow canyon, and 316 tons from the same buyer for girder spans. The Penn Bridge Co. has taken 1,187 tons from the Pennsylvania Railroad Co., for a grain elevator at Philadelphia; the Northwest Steel Co. has taken 1,203 tons from the Pacific Telephone & Telegraph Co., for a building at Portland, Ore., and the Spuck Iron & Foundry Co. has taken 183 tons from the Moola Temple Association, St. Louis, for a building at that city. A contract has also been let for 442 tons for the Pulaski county court house, Little Rock, Ark.

We quote, f. o. b. Chicago, as follows:

Beams and channels, 15 inch and under, 1.63c. For extras, see Pittsburgh report.

Store prices are as follows:

All angles, 3 inches and larger, including 6 inches, $2.00 per 100 pounds; angles over 6 inches, $2.10 per 100 pounds, base; beams, 3 to 15 inches, inclusive, $2.00 per 100 pounds, base; channels, 3 inches and larger, $2.00 per 100 pounds, base.

Rails and Track Fastenings.—It is estimated that a larger tonnage of rails is being taken by the railroads than at any time in the history of the industry. Western roads are covering heavily for next year's requirements and the tonnage of track fastenings is also large. At the present rate, it will not be long before the capacity in this district for the first half is exhausted. It is understood that the larger part of the record specifications received by subsidiaries of the Corporation during September consisted of rail orders, as they are not in a position to book additional tonnage in other lines. Among other sales noted is one to the Duluth

& Iron Range, consisting of 2,500 tons of rails made by the Illinois Steel Co. The Chicago & Milwaukee is also in the market for 8,000 tons. The market is very strong at the ruling quotations and producers are booking business at a very satisfactory profit.

We quote, light rails, f. o. b. Chicago, and track fastenings, f. o. b. Joliet, as follows:

Light rails, carloads, 25 to 45-pound, 1.30c; 16 to 20-pound, 1.35c; 12-pound, 1.40c; 8-pound, 1.50c.

Light section relayers, 45 pounds and under, subject to inspection, $22 to $24; standard section relaying rails, subject to inspection, $23 to $24.

Track fastenings, f. o. b. Joliet, angle bars, 1.50c; railroad spikes, 1.90c; smaller size spikes, 1.70c base; track bolts with square nuts, 2.25c to 2.30c.

Plates.—The market for plates reveals the same conditions as those prevailing in bars and structurals. The leading interest is out of the market and the leading independent producers are practically so. The situation as regards the car builders is becoming acute and it is problematical where the source of future supply will be. Continued purchases by the railroads, however, account for the heavy buying of plates for delivery during the first half. The Northern Pacific is in the market for 500 miscellaneous cars and the Grand Trunk for about 100 passenger cars. The Merchants Despatch is also in the market for 1,000 refrigerator cars. The Canadian Pacific has ordered 60 sleeping cars from the Pullman Co. and the Missouri, Kansas & Texas has also ordered three dining cars from the same maker. The Wells-Fargo Express Co. has ordered 30 express cars from the American Car & Foundry Co., and the San Pedro, Los Angeles & Salt Lake has ordered 350 box cars from the Pullman Co.

We quote, f. o. b. Chicago, as follows:

Tank plates, ¼ inch thick, 6⅝ to 130 inches wide, 1.63c. For extras, see Pittsburgh report.

Store prices are as follows:

Tank steel, ¼ inch and heavier, up to 72 inches wide, 2.00c.

Bolts, Nuts and Rivets.—Independent producers are still in a position to shade prices somewhat on structural rivets. The market, however, is stronger, and the mills are being filled up rapidly. Bolts and nuts remain firm with an exceedingly satisfactory demand.

Rivets

Structural rivets, ¾ to 1¼ inches, 1.98c to 2.08c, base, Chicago, in carload lots; boiler rivets, 0.10c additional.

Bolt and Nut Discounts

Carriage bolts up to ¾ x 6 inches, rolled thread, 75-10-7½; larger sizes, 75-10.

Machine bolts, up to ⅝ x 4 inches, rolled thread, 75-10-10-2-½; cut thread 75-10-7-½; larger sizes, 75-10-5.

Hot pressed nuts, square head, $5.90 off per cwt.; hexagon, $6.55 off per cwt.

Sheets.—The demand for sheets is even heavier and one of the leading independents is quoting on a basis of 3.45c, Pittsburgh, for galvanized; 2.20c, Pittsburgh, for black, and 1.65c, Pittsburgh, for blue annealed. It has become entirely a question of deliveries rather than price and it is estimated that in a very few weeks the capacity of the district for the first half will be filled. Jobbers continue to have trouble with shortages.

We quote, f. o. b. Chicago, as follows:

Blue annealed, No. 10, 2.15c; No. 12, 2.20c. Box annealed, No. 28, 2.70c. Galvanized No. 28, 3.95c.

For mill prices, see Pittsburgh report. Freight to Chicago, 18 cents.

Wire Products.—Wire products continue to run strong, no price shading in this market having been evident for some time. While well sold up for immediate delivery, the leading interest is able to make deliveries in a reasonable time. Further advances in price are slated before the first of the year.

We quote, f. o. b. Chicago, as follows:

Wire nails, jobbers' carload lots, $1.88; retailers' carload lots, $1.93, retailers' less than carload lots, $1.98; painted barb wire, jobbers' carload lots, $1.88; retailers' carload lots, $1.93; retailers' less than carload lots, $1.98, with 30c for galvanizing; plain wire, jobbers' carload lots, $1.68; retailers' carload lots, $1.73.

Merchant Pipe and Tubes.—Although no further advances have been made, this material is very strong at current prices. The makers are overtaking the demand to some extent and report a healthier condition in the market. Consumers are taking material for delivery some time in the future, however, and there is no evidence of a slackening in demand.

We quote store prices on merchant pipe and tubes as follows:

Iron and Steel Pipe Basing Prices.

	Steel.		Iron.	
	Black.	Galv.	Black.	Galv.
Butt.				
⅛ inch and ¼ inch.	69.2	48.2	62.2	41.2
⅜ inch	73.2	62.2	67.2	51.2
½ inch to 1½ inch.	76.2	67.2	70.2	58.2
Lap.				
2 inch	73.2	64.2	67.2	57.2
4½ inch to 6 inch..	75.2	66.2	68.2	59.2
Card Weight.				
7 inch to 12 inch...	72.2	61.2	66.2	55.2
Extra Strong Plain Ends.				
Butt.				
⅛, ¼, ⅜ inch.....	64.2	52.2	59.2	47.2
½ inch	69.2	57.2	64.2	52.2
2 inch to 3 inch....	74.2	62.2	....	....
Lap.				
2 inch	70.2	58.2	65.2	53.2
7 inch to 8 inch....	64.2	52.2	59.2	47.2
Double Extra Strong.				
Butt.				
½ inch	57.2	45.2	....	....
¾ inch to 1½ inch	60.2	48.2	....	....
Lap.				
2 inch	58.2	46.2	....	....
4½ inch to 6 inch..	59.2	47.2	....	....
7 inch to 8 inch....	52.2	40.2	....	....

Tubes.

	Lap weld steel.	Charcoal iron.	Shelby seamless.
	Per cent.	Per cent.	Per cent.
1 inch	37	..	55½
1⅜ to 2½ inch.....	53	38	34
2¾ to 3¼ inch.....	63	48	44
3½ to 4½ inch.....	65½	48	44
5 to 6 inch.....	53	..	..

Cast Iron Pipe.—No material tonnages are pending in this territory and sales have been confined to specifications, which are rather light. Prices are being maintained firmly, however, prominent makers holding that advances would be forced by the continued high price of pig iron if the advent of the dull season did not prevent.

We quote, f. o. b. Chicago, as follows:

Four-inch water pipe, $30, 6 to 12 inches, $28, larger sizes, $27; gas pipe, $1 a ton higher.

Old Material.—Speculative buying is still responsible for advances in the prices of scrap, but a feeling prevails in many quarters that the high point has been reached. Dealers, however, continue to take a bullish attitude and are paying prices well above the current quotations. Good profits have been realized on the advances during the past few weeks and dealers feel that they can afford to sustain a loss on the last turn of the market.

We quote for delivery in consumers' yards, Chicago, as follows:

Gross Tons

Old car wheels	$14.75 to 15.25
Old iron rails	17.00 to 17.50
Rerolling rails (5 ft. and over)	16.25 to 16.75
Old steel rails (3 ft. and und.)	14.50 to 15.00
Frogs, switches and guards	13.75 to 14.25
Heavy melting steel	14.25 to 14.75
Shoveling steel	14.00 to 14.50

Net Tons

No. 1 R. R. wrought	$14.00 to 14.50
No. 2 R. R. wrought	13.25 to 13.75
Arch bars and transoms	17.75 to 18.25
Knuckles, couplers and springs	12.75 to 13.25
Shafting	17.00 to 17.50
Iron car axles	22.00 to 22.50
Steel car axles	18.00 to 18.50
Locomotive tires	13.50 to 14.40
Dealers forge	11.75 to 12.25
Pipe and flues	11.25 to 11.75
No. 1 cast	14.00 to 14.50
No. 1 busheling	12.25 to 12.75
No. 2 busheling	9.00 to 9.50
No. 1 boiler cut	10.50 to 11.00
Boiler punchings	13.00 to 13.50
Cast and mixed boring	8.25 to 8.50
Machine shop turnings	9.00 to 9.50
Railroad malleable	14.25 to 14.75
Agricultural malleable	12.25 to 12.75
Angle bars, splices, etc., iron	16.50 to 17.00
Angle bars steel	13.25 to 13.75
Stove plate and light cast scrap	11.00 to 11.50

CLEVELAND

First Reservation of Iron Ore

Office of THE IRON TRADE REVIEW,
Penton Bldg., Oct. 15.

Iron Ore. — During the past few days, a number of furnace operators have been quietly sounding the market for next year, and one reservation of 150,000 tons of ore has been made. Sellers are discouraging anything looking toward an early opening of the ore market and there is no crystallization of sentiment as to prices, although the prevailing opinion is that the advance will be about 50 cents per ton. Owing to the heavy weather causing some delays in the movement of ore vessels, some wild capacity is needed, but as the grain trade is very strong, with the grain rate advanced to 2¼ cents, and likely to go to 2½ cents before the close of the week, offerings of vessel tonnage for ore promise to be light. The coal trade continues dull. The coal movement for the year has been very unsatisfactory.

On base ores with the guarantee of 55 per cent on old range and Mesabi Bessemer, and 51½ per cent on old range and Mesabi non-Bessemer, we quote as follows: Old range Bessemer, $3.75; Mesabi Bessemer, $3.50; old range non-Bessemer, $3.00; Mesabi non-Bessemer, $2.85.

Pig Iron.—Some additional sales of pig iron have been made at $16.50, Cleveland furnace, for delivery during the first half of next year. This is now apparently the bottom price. The market is rather quiet in the Cleveland district, but there are no indications of weakness. For delivery during the remainder of this year and the first half of next, we quote as follows, delivered in Cleveland:

No. 1 foundry	$17.25
No. 2 foundry	16.75
No. 2 southern	$16.85 to 17.35
Bessemer	17.90
Lake Superior charcoal	19.10 to 19.75
Jackson co. 8 per cent silvery	19.55 to 20.55

Coke.—There is a scarcity of foundry coke and $4 is the usual price. Furnace coke is also quoted somewhat higher. The shortage of cars is more pronounced and a great deal of coke is being shipped in rack cars.

Connellsville furnace coke, $3.00 to $3.25 for prompt delivery, and $3.00 to $3.25 on contract; Connellsville foundry coke, $3.75 to $4.00 for prompt, and $3.00 to $3.25 on contract.

Finished Material. — The county commissioners have awarded the contract for the Detroit-Superior bridge to the King Bridge Co., and the Carnegie Steel Co. will furnish the steel, amounting to about 4,000 tons, of which about one-third will be nickel steel. It is expected that the bridge will be completed in about two years.

The mills are taking orders for plates, shapes and bars in a very conservative way and leading companies are gradually obtaining higher prices without making official announcements of withdrawal of low quotations. Eastern mills continue to obtain handsome premiums for prompt deliveries. An inquiry for 30,000 tons of shapes and plates for oil tank construction is pending from an Ohio company. As deliveries are to extend over 18 months, sales agents are not manifesting much interest in the inquiry. It is stated, however, that the buyer wishes protection against contracts which are now in prospect. Specifications against contracts for spikes are being made in large volume by railroads. The usual price is $1.80 for the first quarter and $1.85 for the second quarter. Agricultural implement makers are not specifying as heavily as they did a short time ago, but there is nothing to indicate any unfavorable turn in their business. It seems probable that some of the smaller sheet mills will have serious difficulty in covering for their sheet bar requirements after Jan. 1.

Old Material.—The heavy demand for steel making scrap continues to dominate the market. Inquiries from outside plants are numerous and for considerable volume. This is particularly true of mills in the Pittsburgh and Sharon districts, offers of $16 gross, delivered, having been received here from a number of plants in those sections. The tremendous demand for low phosphorus scrap continues, the inquiries coming largely from foundries making small steel castings. Borings and turnings are going freely, the demand having suddenly increased. No. 1 cast is being taken by foundries in whatever tonnages offered. Miscellaneous scrap from outlying points is scarce, the dealers being unable to obtain as much as desired. The labor scarcity continues to hamper both consumers and dealers. The Michigan Central closed a list last week and the Grand Trunk on Oct. 15. The Norfolk & Western closes its list on Oct. 17. We quote, f. o. b. Cleveland, as follows:

Gross Tons.

Old iron rails	$16.50 to 17.50
Old steel rails (under 6 ft.)	15.00 to 15.50
Old steel rails (over 6 ft.)	15.50 to 16.00
Relaying rails	23.50 to 24.00
Old car wheels	13.00 to 13.50
Old steel boiler plate	12.25 to 12.75
Malleable iron (railroad)	14.00 to 14.50
Steel axles	19.00 to 19.50
Axle turnings	12.00 to 12.50
Malleable iron (agricultural)	12.00 to 12.50
Heavy steel	14.50 to 15.00
Country mixed steel	13.00 to 13.50
Bundled sheet scrap	11.50 to 12.00

Net Tons.

No. 1 R. R. wrought	$14.50 to 15.50
No. 1 busheling	12.50 to 13.00
No. 1 machine cast	13.25 to 13.75
No. 1 dealers' wrought	11.50 to 12.00
Machine shop turnings	9.00 to 9.25
Pipes and flues	11.50 to 12.00
Wrought drillings	9.00 to 9.25
Cast borings	8.50 to 9.00
Stove plate	10.50 to 11.00
Wrought iron piling plate	16.00 to 16.50
Wrought iron arch bars	17.00 to 17.50

Preparing for a Rush

The Pennsylvania railroad has issued a statement in regard to the present car situation. It says that since Jan. 1, 1912, the Pennsylvania railroad has ordered 12,817 cars, to be delivered as soon as they can be turned out of the shops. The company is waging an active campaign to get the greatest possible service out of each of the 263,990 freight cars owned by the system. There are at present about 27,000 employes engaged on rush orders to put all cars and locomotives in best possible condition. In the Pennsylvania's various shops, 11,500 men are repairing freight cars and 1,225 are building new ones. More than 10,000 men are repairing locomotives, while 1,320 are constructing new ones. Some 2,800 men are working on passenger equipment.

Largest in History.—The Baldwin Locomotive Works is now running at a productive output close to the largest in its history. The company is now employing at the Philadelphia and Eddystone, Pa., plants more than 18,000 men, and has a payroll of $265,000 per week. The officials of the company declare that there is an abundance of work ahead for both plants.

CINCINNATI

Inquiries for Pig Iron Are Not Numerous

Office of THE IRON TRADE REVIEW,
503 Mercantile Library Bldg., Oct. 15.

Pig Iron.—General inquiries in the market are very few, and are usually for lots not exceeding 500 tons. The selling movement, however, has not subsided entirely, as salesmen are placing quite a little business, and the aggregate tonnage obtained in this manner is very satisfactory considering the lull that seems to have settled over the market. Prices are holding well, and in one or two cases have been slightly advanced. Buyers, as a general rule, appear to have closed for a large part of their requirements for the last quarter, and some as far ahead as the first and second quarters of next year, and dealers are not actively soliciting business except in special cases. These last two statements are given as the principal reasons for the present dullness, which is expected to last for only a short time.

There has been no change in southern quotations during the past week, which are given at from $13.50 to $14, Birmingham, for spot shipment and the last quarter, and from $14 to $14.50, Birmingham, for No. 2 foundry iron for the first quarter of next year. Only special contracts are being made on southern iron to cover the second quarter of 1913. One large Alabama furnace which has been quoting $13.50, Birmingham, for this year's delivery, has advanced its price to $14 for any shipment, and states that it has very little iron to sell at this figure. This is the only advance of note in the south during the past week. This practically eliminates all furnace iron in Alabama to be had below $14, Birmingham, for spot shipment, most of the $13.50 brands being distributed among the Tennessee furnaces. One furnace in that state, though, is holding firm at $14.50, Birmingham basis, for any delivery. There is a little re-sale iron in Alabama at $13.50.

There is easily a range of a dollar in southern Ohio prices. A little re-sale iron is still being offered at $15.50, Ironton, but it has practically been disposed of, and is not taken into consideration in regard to quotations. Furnace No. 2 foundry iron is being sold regularly at $16, Ironton, for last quarter, and at $16.50 for first half shipment, and one Hanging Rock furnace has recently sold at $17, Ironton. A large Dayton, O., melter recently closed for from 2,000 to 3,000 tons of malleable, part of which was taken at $16, Ironton basis. A St. Louis user has also bought 1,000 tons of northern malleable at the same figure. With freight rates $3.25 from Birmingham, and $1.20 from Ironton, we quote Cincinnati prices as follows:

Southern foundry No. 1	$17.25 to 18.00
Southern foundry No. 2	16.75 to 17.75
Southern foundry No. 3	16.25 to 16.75
Southern foundry No. 4	16.00 to 16.50
Southern gray forge	15.75 to 16.25
Mottled	15.25 to 15.75
Southern No. 1 soft	17.25 to 18.00
Southern No. 2 soft	16.75 to 17.75
Standard southern car wheel	25.75 to 26.25
Northern No. 2	17.20 to 17.70
Northern No. 3	16.70 to 17.20
Northern No. 4	16.45 to 16.95
Silveries 8 per cent silicon	19.20 to 20.20

Coke.—The market is rather uncertain, and prices, especially on spot shipment coke, depend in a large measure upon the conditions of the sale and the time of shipment. Dealers as a general rule state that there is a decided scarcity of spot shipment coke in practically all of the fields, and that the ovens are withholding quotations, and instructing them to close only certain contracts. Foundry coke is again regaining the proper differential in respect to furnace coke, but in some cases the quotations still operlap. We quote below from the leading coke-producing districts as follows:

Connellsville district:	shipment, Prompt.	second half. Contract
Foundry coke	$3.15 to 3.50	$3.00 to 3.50
Furnace coke	2.85 to 3.25	2.75 to 2.85
Wise county district:		
Foundry coke	$3.25 to 3.60	$3.00 to 3.50
Furnace coke	3.00 to 3.25	2.85 to 3.25
Pocahontas district:		
Foundry coke	$3.15 to 3.25	$3.00 to 3.25
Furnace coke	2.65 to 3.00	2.50 to 3.00
New River:		
Foundry coke	$3.15 to 3.75	$3.15 to 3.60
Furnace coke	2.75 to 3.25	2.60 to 3.00

Finished Material.—The local sheet market is strong and firm, and the local mill has advanced its prices within the past week, galvanized No. 28 gage now being held at 3.45c, and black sheets, No. 28, at 2.30c, Pittsburgh, for delivery after 10 weeks from the present date, as its books are filled that far ahead. The new differentials of 15 cents between Nos. 28 and 29, and between Nos. 22 and 24, and 26, is still being maintained.

Practically all the mills report that they are out of the market for the present on steel bars and structurals, and that they are very slow in taking any new business as far ahead as the second quarter of next year. Some of the larger companies will not consider any orders for any delivery. One large company is quoting 1.45c on steel bars and 1.55c on structurals, Pittsburgh basis, the delivery to be made at its discretion. The general quotations are 1.40c for steel bars and 1.50c for structurals, Pittsburgh.

Warehouse business is active again, and prices have risen accordingly. Steel bars, structurals and twisted concrete reinforcing bars are all being held at higher figures than last week, and boiler tubes will be advanced before the end of the week. We quote warehouse prices, f. o. b. Cincinnati, as follows:

Steel bars, 2c base; iron bars, 1.95c base; structurals, 2.10c base; plates, ¼ inch and over, 2.10c base; sheets, blue annealed, No. 10, 2.25c. base; rivets, cone head, 2.60c, base; cold rolled shafting, 58 pepr cent discount; steel hoops, 2.10c base, full extras; boiler tubes as follows: 1¾ to 2¼ inch, 60 per cent discount; 2½ inch, 62 per cent discount; 2¾ to 3¼ inch, 65 per cent discount; 3½ to 4½ inch, 67 per cent discount; 5 to 6 inch, 60 per cent discount; soft steel cold twisted concrete bars, cut to length as follows: ¾ inch square and larger, 2.15c; ⅝ inch square and larger, 2.25c; ½ inch square and larger, 2.35c; ⅜ to ⅜ inch square and larger, 2.55c, and ¼ inch square and larger, 2.65c.

Old Material.—The scrap iron market continues to gain in strength, and is very active. Prices have been generally advanced, in some cases as high as 50 cents, and in one case, that of heavy melting scrap, 75 cents per ton. The general quotations on machine shop turnings are from $7.75 to $8.25. Cast borings are being bought by the dealers at from $8 to $8.25 per net ton. We quote below prices dealers will pay and also dealers' selling prices in Cincinnati and vicinity as follows:

Gross Tons

Old iron rails	$14.25 to 14.75
Old steel rerolling	12.25 to 12.75
Old iron axles	18.75 to 19.25
Heavy melting scrap	12.25 to 13.00
Relaying rails	21.50 to 22.25
Bundled sheet scrap	9.50 to 10.00

Net Tons

Old No. 1 R. R. wrought	$11.75 to 12.25
No. 1 machinery cast	12.00 to 12.50
No. 1 busheling	10.25 to 10.75
Stove plate	9.75 to 10.25
Machine shop turnings	7.75 to 8.25
Cast borings	8.25 to 8.75
Heavy turnings	8.50 to 9.00
Mixed cast	10.75 to 11.25
Malleable	8.50 to 9.00

PHILADELPHIA

Conservative Policy on Next Year's Business

Office of THE IRON TRADE REVIEW,
Philadelphia, Oct. 15.

Strong underlying conditions are making themselves felt in the eastern iron and steel market. Consumers are specifying heavily against finished material contracts and it is already assured that full outputs will be taken up well into the new year. In addition, there remains a strong unsatisfied inquiry. Makers consequently are selling conservatively for first quarter at higher prices. Scarcity of raw materials at advancing prices along with a good consuming demand, is steadily putting up pig iron values. Eastern Pennsylvania and Virginia foundry and lower grades are again up 25 to 50 cents and basic in the east seems about to settle upon a price about $1 above the last previous sale. Old material is higher and very strong. Heavy steel has reached $15.50 delivered in sales and is headed higher. Other grades are equally buoyant.

Pig Iron. — Eastern Pennsylvania makers are still adhering to conservative policies in selling after Jan. 1 and are advancing their prices freely in an effort to keep pace with the steady, strong demand. The unfilled orders of the Eastern Pig Iron Association for September reported during the past week showed no marked increase, reflecting the conservative selling, and there was little change in the deeply reduced stocks on furnace banks. The $16.50 furnace price, or $17.25 Philadelphia, for standard No. 2X for this year disappeared in the week and nothing below $17.50, Philadelphia, is now offered. One leading Lehigh valley maker advanced to $17 furnace for the year and $17.50 for first quarter, or $17.75 and $18.25, Philadelphia, respectively. Sales have been quite freely made for first quarter on the $17.75 delivered basis. Low grade iron, especially pipe grade, is strong and scarce. One Delaware river pipe maker in the week took about 5,000 tons for this year, including several thousand Eastern Pennsylvania forge at $16.70 delivered and a tonnage of Virginia lower silica at $14 furnace or about $16.40 delivered. Virginia lower grades have now been advanced to $14.50 furnace. At the same time, the leading Virginia maker advanced No. 2X for first quarter and half to $15.25 furnace and No. 2 plain to $14.75 furnace. Mill forge is well held at $16 eastern Pennsylvania furnace, two buyers having taken several thousand tons on this basis in the week, equivalent to $16.50 to $16.75, delivered. The Pennsylvania railroad is inquiring for 1,500 to 3,000 tons of forge, 500 to 1,000 tons of No. 2X and 600 to 1,200 tons of charcoal for first quarter, Altoona delivery. Basic iron, though nominal in price in the absence of sales, is very strong. It is probable that not less than $17.50 delivered could be done for forward shipment, although the last sale several weeks ago was at $16.50 delivered. On a lot of 2,000 tons for January, $17.70 delivered was quoted by one maker. Little, if any, basic is open for this year and some makers are talking $18 for first quarter. A Central Pennsylvania consumer took 2,000 tons of practically off malleable for shipment into first quarter, from a Buffalo maker at about $18.50 delivered or $16.50 furnace. Low phosphorus continues very strong. The American Steel & Wire Co. has taken upwards of 5,000 tons from an eastern Pennsylvania maker for Worcester delivery at the basis equivalent to $22.25, Philadelphia, but $22.50 is now asked as a minimum. One large block is pending. The Macungie, Pa., furnace is going into blast on low phosphorus iron. We quote for prompt and first quarter delivery at consumers' plants in Philadelphia and vicinity as follows:

Eastern Pa. No. 1X foundry	$17.75 to 18.00
Eastern Pa. No. 2X foundry	17.50 to 17.75
Eastern Pa. No. 2 plain	17.00 to 17.50
Standard gray forge	16.50 to 16.75
Basic (Eastern and Central Pa.)	16.50
Virginia No. 2X	17.65 to 17.80
Southern No. 2	16.50 to 17.50
Malleable	18.50 to 19.00

(First Quarter.)

Malleable	$18.95 to 19.35
Basic	17.00 to 17.50
Eastern Pa. No. 2X foundry	17.50 to 18.00
Eastern Pa. No. 2 plain	17.25 to 17.50

Iron and Steel Bars. — An eastern Pennsylvania buyer who has been in the market for 10,000 tons of steel rounds for first quarter is understood to have placed this contract. The steel bar market has considerably strengthened in that makers have generally withdrawn from the 1.35c, Pittsburgh, base for first quarter and are now asking 1.40c, Pittsburgh, or 1.55c, Philadelphia, as a minimum. Some of the largest makers are so heavily booked ahead that they are out of the market for first quarter, and there is no free tonnage for this year. Bar iron in the east continues to rise and the market is now at 1.50c mill minimum, or 1.57½c, Philadelphia, with some makers quoting 1.55c, mill. Bookings are good.

We quote for delivery to consumers' plants in Philadelphia and vicinity: Steel bars at 1.55c to 1.60c, and common bar iron at 1.52½c to 1.57½c. Steel bars from store are quoted at 2.00c.

Plates and Shapes.—So heavy is the volume of specifications and new current business flowing in upon eastern plate makers that some of them are now assured of having their full output taken up well through the first quarter. One leading eastern maker continues to quote 1.50c, Pittsburgh, or 1.65c, Philadelphia, for October contracts for sheared plates and $1 more for universal with advances for November and December. One Pittsburgh district maker able to make deliveries in eight to ten weeks has been booking liberally at 1.50c, Pittsburgh, or 1.65c, Philadelphia. Eastern plate makers are conservative in taking first quarter contracts, on which they are quoting 1.60c, Pittsburgh, or 1.75c, Philadelphia, for eastern shipment on sheared and $1 more on universals. Pittsburgh district makers now usually quote 1.50c, Pittsburgh, for first quarter. Eastern shape mills where they are obliged to act are taking first quarter contracts at 1.60c, Pittsburgh. They are well sold up for this year, but one maker has some tonnage still to offer at 1.45c, Pittsburgh, for fairly early shipment.

The Norfolk & Western railroad is inquiring for about 5,000 tons of shapes and plates for the construction of 500 steel gondola cars in its own shops. Eastern fabricators are bidding on the tSevens building, Chicago, which will require about 2,500 tons for which Bethlehem sections are specified. Bids are going in this week on the Balboa shops, Panama canal, to require about 3,500 tons.

We quote delivered to consumers' plants in

Philadelphia and vicinity: Sheared steel plates, 1.60c to 1.65c; universal steel plates, 1.65c to 1.70c; structural shapes, 1.60c to 1.65c. Plates and shapes from store are quoted at 2.00c to 2.15c.

Sheets.—The leading eastern sheet maker has again advanced its price to a minimum of 1.75c, Pittsburgh, or 1.90c, Philadelphia, to forward customers for 10 gage blue annealed. Some middle western consumers unable to get early deliveries have been appealing to eastern makers and have shown no hesitancy in paying premiums. Eastern mill books are liberally supplied with orders.

We quote for delivery to consumers' plants in Philadelphia and vicinity, No. 10 gage blue annealed sheets at from 1.80c to 1.90c.

Semi-Finished Steel.—Leading eastern sellers of billets are fully sold up for the year and well into first quarter, but the pressure of offers from consumers seems little allayed and the scarcity of crude steel is still marked. The Alan Wood Iron & Steel Co. may put in additional open hearth capacity and there is a strong possibility of the idle open hearth plant of the Maryland Steel Co., Sparrows Point, Md., resuming in the near future.

We quote delivered to consumers' plants in Philadelphia and vicinity 4 x 4-inch open-hearth rolling billets at $28 to $28.50 and forging billets at from $32 to $33.

Coke.—A leading eastern consumer paid $3.40 ovens, for a lot of spot Connellsville furnace coke in the week. Higher prices than this for very small lots are reported. Some eastern consumers are short on supplies and are making open offers for spot coke at the market, but are finding it difficult to fill their needs as many makers are declining to quote.

Old Material.—Heavy melting steel reached a new high point of the present advance, of $15.50 delivered, under the buying of several large eastern Pennsylvania consumers the past week. Two steel makers were among those covering upon their requirements and each took round blocks reaching in all 10,000 tons or more at this figure. Doubt is expressed whether this price could now be duplicated by purchasers and predictions are made that $16, delivered, will soon prevail. Rerolling rails are higher, good-sized lots aggregating about 4,000 tons having gone at $16.75 delivered in east. There continues a steady buying in railroad wrought, heavy cast and stove plate that is pushing up values. Considerable speculation by dealers continues apparent in wrought pipe especially, and in other grades. Low phosphorus scrap is strong and advancing, sales have been made at $19.50, delivered. The old material market generally is strong and buoyant.

We quote gross tons delivered to consumers' plants in eastern Pennsylvania and western New Jersey as follows:

Old iron rails	$17.00 to 18.00
Old steel rails (rerolling)	16.50 to 17.00
No. 1 heavy melting steel	15.00 to 15.50
Old car wheels	14.50 to 15.00
Old iron axles	24.00 to 25.00
Old steel axles	18.00 to 18.50
No. 1 railroad wrought	17.00 to 17.50
Wrought pipe	13.75 to 14.25
Cast borings	10.75 to 11.25
Machine shop turnings	11.00 to 11.50
Heavy cast	14.25 to 14.75
Malleable	13.25 to 13.50
Stove plate	11.00 to 11.50
No. 1 forge	13.50 to 14.00
Low phosphorus	19.00 to 19.50

Freight rates per ton on scrap from Philadelphia to principal eastern consuming points are: $0.60 to Ivy Rock, Pa.; $0.65 to Phoenixville, Pa.; $0.80 to Coatesville, Pa.; $0.85 to Bethlehem, Pa., Reading, Pa., and Roebling, N. J., $1.10 to Pottsville, Pa.; Lebanon, Pa., and Columbia, Pa.; $1.20 to Harrisburg and Steelton, Pa.; $1.40 to Milton, Pa.

ST. LOUIS

Market Strong With Buying in Small Lots

Office of THE IRON TRADE REVIEW,
St. Louis, Oct. 15.

Pig Iron.—About the only inquiry of consequence in the market at St. Louis is one for 1,000 tons of malleable. The market is strong, however, with considerable buying in small quantities. Prices tend toward further advancement. A sale was made the latter part of last week of 1,500 tons of northern foundry iron for first half delivery, and smaller lots to the amount of about 2,000 tons of various grades. Northern iron has advanced to $17.50, Chicago, at the furnace, and at Ironton it is almost impossible to get quotations.

Southern No. 2 is strong at $14 to $14.50, Birmingham basis. Prices for southern iron follow:

Southern No. 1	$18.25 to 19.25
Southern No. 2	17.75 to 18.75
Southern No. 3	17.50 to 18.50
Southern No. 4	17.25 to 18.25

Coke.—The market for coke has gone clear out of sight, Connellsville foundry having been sold last week as high as $4 a ton for immediate shipment. There is considerable inquiry, no large buying. We quote the following prices:

We quote 72-hour Connellsville foundry grades, $4.00 for immediate shipment or delivery through the year; 48-hour Connellsville furnace, $3.50; best 72-hour Virginia foundry, $3.50; 48-hour Virginia furnace, $2.75. The freight to East St. Louis and St. Louis is $2.80, and $2.70 from the Virginia fields when shipment is destined beyond St. Louis.

Finished Material.—It is estimated that $10,000,000 worth of construction work is under way in the new shipping and terminal district, between Arsenal and Poplar streets and Broadway and the river, as a result of the expansion of the Manufacturers' railway in connection with the Cotton Belt, the Municipal Free bridge and the improvements that the Iron Mountain railway is making. Prices are strong on all lines of finished material, and a lot of buying is steadily going on among the building trades.

Old Material.—Prices for scrap iron are stationary, but the demand is increasing, especially from the rolling mills and steel plants. Foundry grades also keep in good demand. No list will be out until sometime between Oct. 20 and Oct. 25.

Prices which purchasers are willing to pay, f. o. b. St. Louis, follow:

Gross Tons.

Old car wheels	$15.50 to 16.00
Old iron rails	15.50 to 16.00
Rerolling rails (5 ft. and over)	14.50 to 15.00
Old steel rails (3 ft. and und.)	14.00 to 14.50
Light section relayers (45 lbs. and under, subject to inspec.)	24.00 to 25.00
Relaying rails, subject to insp.	24.00 to 25.00
Frogs, switches and guards cut apart	14.00 to 14.50
Heavy melting steel	14.00 to 14.25
Shoveling steel	13.00 to 13.50

Net Tons.

No. 1 railroad wrought	$13.00 to 13.50
No. 2 railroad wrought	12.50 to 13.00
Arch bars and transoms	15.50 to 16.00
Knuckles, couplers and springs	12.50 to 12.75
Shafting	17.00 to 17.50
Iron car axles	20.00 to 21.00
Steel car axles	17.50 to 18.00
Locomotive tires	13.50 to 14.00
Pipes and flues	9.50 to 10.00
Tank iron and cut boilers	9.00 to 9.50
No. 1 cut busheling	11.50 to 12.00
No. 2 cut busheling	9.50 to 10.00
Cast and mixed borings	7.25 to 7.75
Machine shop turnings	8.75 to 9.25
Railroad malleable	12.50 to 13.00
Agricultural malleable	10.50 to 11.00
Stove plates	10.00 to 10.50
Angle splice bars (iron)	13.50 to 14.00
Angle splice bars (steel)	12.50 to 12.75

Ship Yards Sold.—Harland & Wolff have sold to the recently formed Burmeister & Wain (Diesel system) Oil Engine Co., Ltd., the engineering and boiler making shops at Govan which it acquired in February of this year from the London & Glasgow Ship Building Co. The works in future will be devoted entirely to the manufacture of oil engines for marine purposes. Harland & Wolff will retain their Glasgow ship yard, and will probably obtain from Belfast what steam engines they require for the ships built there.

NEW YORK

Pig Iron Bookings Light---Cuban Ore Advances

Office of THE IRON TRADE REVIEW,
1115 West Street Bldg., Oct. 15.

Iron Ore. — Diaquiri, Cuban ore, mined by the Spanish-American Iron Co., has been advanced for this year's delivery from 7¼ to 7¾ cents per unit, Philadelphia, equivalent to about 30 cents a ton. The output of El Cuero, Cuban, ore of the Ponupo Manganese Co., is already fully sold up for next year's delivery, except a small balance of the low phosphorus grade, for which advancing prices are asked. The interests developing the eastern Texas ore properties report their mining plant now being installed will be in a position to make shipments to the eastern Pennsylvania market in January or early in the new year. On local New York and New Jersey ores for this year's delivery, some sellers have been obtaining 7¾ cents per unit, delivered, which represents some advance, but generally are not booking into next year, for which delivery 8 cents, delivered, about represents their ideas of price. A sale of 18,000 tons of a prominent New York state non-Bessemer ore, however, was done at a slightly lower price.

Pig Iron.—A conspicuous recession of buying activity in the metropolitan and surrounding districts, now generally prevails and has made its effect felt in the bookings of sellers in the past week, which have been light. Eastern makers, however, are inclined to welcome a lull in the market because of their well filled order books and because the recent advance has been quite rapid. They see only a healthful effect in the present easing up of activity. The quietness in the market has nevertheless not restrained some further price advances. A leading Lehigh valley maker this week put up its schedule 50 cents to $17, furnace, for No. 2X or $17.70, Jersey tidewater, for this year, and to $17.50, furnace, or $18.20, tidewater for first quarter. Other important Lehigh valley and Schuylkill valley producers are following closely. A leading central Pennsylvania maker advanced $1 to $17, furnace, for first quarter, equivalent to practically $19, tidewater, or $19.35, New England. Other central Pennsylvania furnaces are quoting on the $16.50, furnace, basis, for No. 2X, which represents some advance. Buffalo iron is now apparently on a minimum of $16.50, furnace, for No. 2X. Virginia metal for first quarter is up 25 cents or more in the week to $15.25, furnace, for No. 2X, $14.75 for No. 2 plain and $14.50 for lower grades for first quarter and half. This schedule was announced by the leading Virginia maker. The inland New England market at present is quoted from about $19 to $19.50 for first quarter. Forge iron in the east is strong, $16, eastern Pennsylvania furnace, having been freely done. A New Jersey buyer closed for about 1,000 tons of this grade for this year on about this basis. Another Jersey buyer which was out for 1,000 tons of foundry iron has decided not to buy at present. The American Steel & Wire Co. has purchased an additional block of 5,000 tons or more of standard low phosphorus iron for Worcester, Mass., delivery, on an equivalent of $22.25, Philadelphia basis. Standard low phosphorus is now held at a minimum of $22.50, Philadelphia, and the Tennessee maker is asking $23. A recent sale of 200 tons of eastern Pennsylvania No. 2X for shipment to Peru at $16.50, furnace, is noted. The Ivanhoe furnace in Virginia is about to resume and the West End and Pulaski City stacks will also go in in the near future. We quote for prompt and last quarter shipment, New York shipment as follows:

Northern foundry No. 1	$17.50 to 17.75
Northern No. 2X foundry	17.50 to 17.70
Northern No. 2 plain	17.20 to 17.50
No. 2 Virginia	18.05 to 18.25
No. 2 southern foundry	17.50 to 18.00
Malleable	18.50 to 19.00
Gray forge	16.50 to 16.70

(First Quarter.)

Northern No. 2X foundry	$17.70 to 18.25
Northern 2 plain	17.20 to 17.70
No. 2X Virginia	18.05 to 18.25
No. 2 Southern	18.00 to 18.50

Ferro-Alloys.—Some sales of ferromanganese at the new high price of $61, seaboard, for forward delivery, are reported by sellers, but these have not been large, as consumers appear to be well covered. Small sales for January delivery have been made at $64, seaboard. Prompt material continues to command high prices. There is some talk in the market that the Balkan war situation may interfere with manganese ore shipments from Poti, Russia, and exercise some effect on the market. A middle western castings company is inquiring for 600 tons of 50 per cent ferro-silicon for next year's delivery, and several carload inquiries are pending. We quote, standard English 80 per cent ferro-manganese, at from $65 to $70, for early shipment, and at $61, seaboard, for delivery after Jan. 1, and 50 per cent ferro-silicon at $75, Pittsburgh or Philadelphia, for carloads, $74 for larger lots and $73 for 600 tons or more. For this year the schedule is $2.50 less.

Cast Iron Pipe—Newark, N. J., is inquiring for 3,000 to 4,000 tons of six to 20-inch pipe for bids Oct. 17. The Portsmouth, Va., letting of 4,000 tons of 24-inch, which is expected to go to Virginia makers, went in today. The cast pipe market continues active, principally on private buying, and shows some gradual advance. Large sized pipe, though a little more active, is still moving rather slowly. We quote 6-inch pipe at from $23 to $24, f. o. b. New York in carload lots.

Finished Material. — Conservative action in further price advances in finished lines is being actively counselled by leading steel makers to check any development in the direction of runaway conditions. Some prominent executives are instructing their sales organizations to make no further price advances of any kind during the remainder of the present year, for it is held that such quotations are largely nominal in view of the congested state of mill order books. It is advised that further advances should be deferred until the mills have made some headway beyond Jan. 1 into the heavy tonnage banked on the books.

Eastern steel makers with capacities generally filled for this year and in some cases beyond, are selling conservatively for first quarter, but some further contracts have been done in plates and shapes at 1.60c, Pittsburgh, or 1.76c New York. Wherever offerings can be made for this year, plate and shape makers are having no trouble to get 1.50c, Pittsburgh base, or upward. Steel bars are now on a minimum of 1.40c, Pittsburgh,

or 1.56c, New York. Bar iron is going steadily higher, some eastern mills quoting 1.55c to 1.60c, mills.

New fabricated tonnage at the moment is light. The extended deliveries on new work running on sizeable tonnages from 3 to 4 months because of their filled up condition, is tending to discourage fresh inquiries at this time. Much work is accumulating while prospective buyers are waiting for the shops to catch up upon their delayed schedules. Wherever the shops are able to offer reasonably prompt deliveries, they are able to quickly fill their free capacity. Fabricated prices in the metropolitan district show considerable improvement and now range from $65 to $68, erected, for lofts, and $68 to $70, erected, for apartments.

Railroad work in the east is of modest proportion. The Phoenix Bridge Works has 250 tons for a Boston & Maine bridge at Somerville, Mass; the Pennsylvania Steel Co., a 100-ton bridge on the Baltimore division of the Pennsylvania railroad, and also a small bridge for the Boston & Maine in the Boston territory. Bids have gone in for a bridge for the Central Railroad of New Jersey near Bound Brook, N. J., 700 tons, and the New York Central has put out an inquiry for another terminal area, this city, about 750 tons. Other recent lettings include 550 tons to the Hinkle Iron Works for an apartment at Riverside Drive and 148th street, this city; 350 tons to the New England Structural Co. for the Sargent Trust Co. building, Boston; 300 tons to the Prince Iron Works for the Schermerhorn building, 62 Broadway, this city; 250 tons to the Eastern Bridge & Structural Co. for a building at Worcester, Mass.; 300 tons to the Passaic Steel Co. for the Munden apartment on Ninty-fifth street, near Amsterdam avenue, this city, and 300 tons to an independent shop for public school No. 99, Brooklyn. The Passaic Steel Co., 325 tons for the Hennessy Realty Co. apartment, 41 West Eighty-third street; 250 tons for the Westport Construction Co. apartment, West Sixty-ninth street, and the Hedden Iron Construction Co., 260 tons for the Adlone Construction Co. apartment, Seventh avenue near Fifty-fourth street. The Elkin Realty Co. apartment, 1,200 tons, Eighty-fifth street and West End avenue, which was originally reported as taken by the Lehigh Valley Structural Co., has now gone to Ravitch Bros. The 20-story Todd loft uptown about 1,500 tons, is up for bids, as well as the garage for the Ford Automobile Co., at Long Island City and the Rhinelander building, this city. We quote, delivered New York tidewater, as follows:

Plain structural shapes, 1.61c to 1.66c; tank plates, 1.66c; steel bars, 1.56c; common iron bars, 1.50c to 1.55c; steel bars from store, New York delivery, 2.00c; plates and shapes from store, 2.15c; extras as shown under Pittsburgh report.

Wire Products.—The long standing extra of 30 cents for the galvanizing of wire products, was advanced to 40 cents per 100 pounds, or $2 a ton by the American Steel & Wire Co. in a circular sent to the trade dated Oct. 12. This change is of a sweeping character and it affects fully half the wire products produced in the country. In addition to the common wire products it includes field fence and all other lines in which spelter is used in the finishing processes. The former extra of 30 cents had been practically in effect without change for 20 years or more. The present high market for spelter, which is now quotable at 7.50c, upward per pound, has forced the readjustment of the extra. Until the recent market, spelter has usually not sold above 5 cents per pound. No change has been made by the leading interest in its base schedule for plain wire products, which remain $1.50, Pittsburgh, for 100 pounds for plain wire and $1.70, Pittsburgh, for wire nails, jobbers prices. Under the revised extra, galvanized wire is now $1.90, Pittsburgh, and galvanized nails, $2.10, Pittsburgh. Makers generally are adopting the revised extra.

Rails and Track Material. — The Louisville & Nashville railroad has placed an order with the Tennessee Coal, Iron & Railroad Co. for approximately 90,000 tons of first and second rails for next year's delivery. The Pere Marquette system has ordered 15,000 tons of rails from the Illinois Steel Co. Eastern railroads have their rail requirements pretty well taken care of at present, but considerable buying is yet to be done, including that by the Lehigh Valley, New Haven, Boston & Maine, etc. The New Haven system is now preparing its specifications, but has not as yet issued formal inquiries.

Old Material.—A good demand and a gradual advance in values characterizes the scrap market. Each fresh buying movement is putting up prices 25 to 50 cents a ton. Steel scrap sold in sizeable lots at $15.50, eastern Pennsylvania, the past week and some dealers are holding for $16, delivered on the next sale. No. 1 railroad wrought ranges from $17 to $17.50, eastern Pennsylvania. Considerable speculation is still apparent. We quote, gross tons, prices New York dealers will pay at tidewater, as follows:

Old car wheels	$13.25 to 13.50
Old iron axles	21.00 to 22.00
Steel axles	16.50 to 17.00
Old steel shafting	15.25 to 15.50
No. 1 heavy melting steel	13.25 to 13.50
No. 1 R. R. wrought	15.00 to 15.50
Wrought pipe	11.25 to 11.50
Cast borings	8.25 to 8.50
Machine shop turnings	8.75 to 9.00
Heavy cast	11.50 to 11.75
R. R. malleable	11.25 to 11.75
Stove plate	9.00 to 9.50
Grate bars	8.00 to 8.50

Freight rates on scrap per ton to Steelton, Pa., Columbia, Pa., Pottsville, Pa., and Harrisburg, Pa., are $1.50 from Jersey City, and $2.00 from New York; to Coatesville, Pa., Ivy Rock, Pa., Phoenixville, Pa., and Reading, Pa., $1.50 from Jersey City, and $1.80 from New York; to Bethlehem, Pa., $1.10 from Jersey City, and $1.60 from New York; to Roebling, N. J., $1.00 from Jersey City, and $1.50 from New York; to Milton, Pa., $1.60 from Jersey City, and $2.00 from New York; to Jersey City, $1.00 from New York; to Newark, $1.10 from New York.

BUFFALO

Less Activity, But Prices Are Strong

Office of THE IRON TRADE REVIEW,
Buffalo, Oct. 15.

Pig Iron.—The total placement for the week amounted to about 12,000 tons. The marked activity of the past quarter has slackened to some extent, but the tone of the market is even stronger than it was last week. There continues to be a considerable volume of inquiry for small tonnages, while the major consumers of the territory seem to be covered for their requirements well up to July 1 of next year.

The foundries of the district report a decided scarcity of labor, which is acting against the output of their plants and reducing their demands upon the furnaces. Despite this situation, the furnaces are unable to keep pace with the flood of orders coming in and entered upon their books. The producers in this section have practically all established $16.50 as the minimum asking price on any grades of pig iron for requirements up to July 1. The stacks of the district are sold up to fully 90 per cent of their capacity, causing prices to again stiffen and advance on all grades, below No. 1X foundry, as shown by the following range which is being rigidly maintained, f. o. b. Buffalo:

No. 1X foundry	$17.00 to 17.50

No. 2X foundry	16.75 to 17.25
No. 2 plain	16.50 to 16.75
No. 3 foundry	16.25 to 16.50
Gray forge	16.25 to 16.50
Malleable	16.75 to 17.25
Basic	17.00 to 17.50
*Charcoal	18.75 to 21.25
*Some grades and brands	22.00

Coke.—The week has shown a decided amount of activity in the buying of coke. Many foundries of the section are not only buying to meet present demands, but are endeavoring to stock up in order to avoid a repetition of the experiences of last winter when the shortage of cars and traffic congestion crippled their fuel supply. The indications are that the situation in this respect will be duplicated this winter. So extensive purchases are being made in coke, regardless of the prices being asked.

Finished Material.—It is still a decidedly sellers' market. Consumers are endeavoring to place their requirements for first quarter and are being met with a reluctance on the part of the mills to sell to any but established customers, and even then at the option of the home offices of the plants. The selling agents of the various mills have practically all been instructed to submit to the mill offices inquiries for even carload orders, to see if they can be rolled to advantage. On a number of types and sizes, the mills are entirely out of the market. The demand upon the warehouses continues to be pronounced and at advanced prices, with an increasing number of stock sizes and shapes completely sold out. Most of the producers are holding rigidly to 1.40c, base, on bars and small shapes, and 1.50c, base, on structural and plate, while several interests have not advanced above 1.35c and 1.40c. But the latter say they have nothing to sell. The spread between bright wire and galvanized wire has been increased 10c; the differential on the latter being 40c instead of 30c. One large independent is asking $1.75, base, on wire nails, and $1.55 on bright wire. A large amount of business is being planned for the fabricators, but most of the building projects are being put over until spring because of the inability of the mills to make deliveries.

The American Express Co. plans to erect a ten-story office building in Buffalo. Preliminary plans being made by Green & Wicks, architects, Buffalo. A large tonnage will be required. The Buffalo department of public works will this week open bids for new grammar school No. 3, requiring 100 tons, and next week bids on new school No. 57, requiring 200 tons.

Old Material.—The dealers of the district report increasing activity and a strengthening of the whole situation. With the firmness of the market in the other lines, the dealers are not pressing sales at the present range, holding to the belief that better prices will soon be readily obtainable. The trading in old car wheels caused a sharp advance in this line. The schedule of prices being quoted in the district for gross tons, f. o. b. Buffalo, is substantially as follows:

Heavy melting steel	$14.50 to 14.75
No. 1 railroad wrought scrap	15.50 to 16.00
No. 1 R. R. and mch. cast sc'p	14.00 to 14.50
Old steel axles	16.00 to 16.75
Iron axles	23.25 to 23.75
Car wheels	15.25 to 16.00
Railroad malleable scrap	13.75 to 14.00
Wr'ght iron and soft steel turn.	8.75 to 9.00
Cast iron borings	8.00 to 8.50
Low phosphorus steel scrap	17.00 to 17.50
Old iron rails	15.25 to 15.75
Tank iron	10.50 to 11.00
Boiler plate, sheared	15.00 to 15.50
Pipe and tank	10.25 to 10.75
Stove plate	11.25 to 11.75
Sheet iron	7.50 to 8.00
Locomotive grate bars	11.75 to 12.25

BIRMINGHAM

Market Stronger—Advances on Some Grades

Office of THE IRON TRADE REVIEW,
Birmingham, Ala., Oct. 15.

Pig Iron.—The asking price for certain local grades has just been advanced to a basis of $14.50 per ton at Birmingham, for any delivery in the remainder of the year, and through the first quarter. For prompt delivery, a lot of 300 tons is just reported sold at the figures named while an additional 400 tons were entered at the same price for shipment in the first quarter. A $14.50 per ton basis was also the consideration for such carload orders as were placed in the week, and it is not believed that any small requirements would now be considered at lower figures. Where round tonnages are required, it cannot be said with accuracy just what figures could be elicited—in fact, the conditions now existing are such that certain large producers are not disposed to express themselves in the matter of price. It is quite likely that in certain quarters of the territory, more especially the competitive sections, more or less local iron can still be had at the $13.50 schedule, if delivery can be made prior to the beginning of the second quarter; but the price submitted on any large requirement would govern entirely by the several local conditions at the time inquiry was made. In this, the scarcity of labor, and the probable increase in the cost of production are factors as well as the heavy calls for delivery that are being made against previous contracts. This last has depleted stock accumulations of all grades in certain yards, while the actual reduction in all accumulations made in September was 12,000 tons, notwithstanding the increased production for that month. The entire accumulation in this state on Oct. 1 was practically 83,000 tons, which consists of 46,000 tons of free foundry iron; 29,000 tons in warrant yards and 8,000 tons of basic. The market is considered stronger, but in view of conditions existing, prices are not revised.

For delivery during the remainder of the year:

No. 1 foundry	$13.50 to 14.00
No. 2 foundry	13.00 to 13.50
No. 3 foundry	12.50 to 13.00
No. 4 foundry	12.00 to 12.50
Gray forge	11.50 to 12.00
Mottled	11.00 to 11.50
Standard basic	12.50 to 13.00
Off basic	11.00 to 11.50
Standard charcoal	22.50 to 23.00

With the exception of charcoal iron, an advance of 25c to 50c per ton would be asked over the above figures for deliveries in the last quarter.

Cast Iron Pipe.—The letting of several municipal requirements for round tonnages, with a number of small orders for maintenance, was the nature of business transacted within the week. Local manufacturers report conditions very satisfactory and the new schedule of prices strictly adhered to, as follows: Water pipe per net ton, f. o. b. here, 4-inch, $4.50; 6-inch and up, $22.50, with $1 per ton extra for gas pipe. Special fittings are quotable at from $45 to $50 per net ton at foundry.

Old Material.—Dealers report the demand for all grades of this material on the increase. Steel scrap is showing more strength than in the past few weeks and premiums are being offered for such available tonnage. The feature of this market is the number of inquiries being received from Cincinnati and St. Louis territories. Prices dealers are asking for their holdings are as follows, per gross ton, f. o. b. cars here:

Old iron axles (light)	$15.50 to 16.00
Old steel axles (light)	13.50 to 14.00
Old iron rails	13.00 to 14.00
No. 1 R. R. wrought	12.00 to 12.50
No. 2 R. R. wrought	10.50 to 11.00
No. 1 country	8.50 to 9.00
No. 2 country	7.50 to 8.00
No. 1 machinery	10.50 to 11.00
No. 1 steel	10.00 to 10.50
Tram car wheels	9.00 to 9.50
Standard car wheels	12.50 to 12.50
Light cast and stove plate	8.50 to 9.00

METAL MARKETS

Pin Prices Fluctuate—Copper Unsettled

New York

Oct. 15.

Copper. — The Balkan disturbance has had the effect of checking demand from copper consumers both in Europe and this country the past week. Its influence on foreign quotations of standard copper warrants was far more unsettling than it proved to be in the domestic market, however. Leading sellers are still quoting lake at 18c, electrolytic at 17.62½c to 17.75c, and casting at 17.50c. On Friday 175 tons of standard copper were sold on the New York metal exchange at 17.25c, and 25 tons at 17.20c, for December delivery. Exports of copper since Oct. 1, are 12,301 tons.

Tin.—Prices in London fluctuated over a range of £8 the past week, and domestic prices were governed by that influence. At the close of business abroad today quotations had recovered over £3 from the lowest of the week and there was a firm demand from buyers. Spot tin closed at £225 5s and three months at £224.

Domestic consumers bought only to meet immediate requirements, in view of the unsettled foreign situation. Sales have been made between 49c and 50.10c in this market. The closing price of spot tin today is nominally 49.25c. Arrivals of tin since Oct. 1, aggregate 2,205 tons, and there are 2,410 tons afloat.

Lead.—The lead market continues firm and there is a fair demand. All sellers are now quoting prompt shipment at 5.10c in New York.

Spelter.—Buyers are generally covered for nearby needs, but there is no pressure to sell and the price of spelter holds up well. Prime western is quoted by some sellers at 7.57½c in New York.

Antimony. — Buyers continue to show interest in antimony and prices are being maintained at the recent advances. Cookson's is 10.12½c, Hallett's is 9.37½c and Chinese and Hungarian is 9.20c.

Chicago

Oct. 14.

New Metals.—New metals in this district are displaying some tendency toward weakness when compared with the prevailing conditions of the past few weeks. Spelter continues strong, however, and is causing considerable congestion among consumers.

We quote, dealers' selling prices, f. o. b. Chicago, as follows:

Lake copper, carload lots, 17⅝c; casting, 17⅜c; smaller lots, ¼c to ¾c higher. Spelter, car lots, 7.50c; lead, desilverizing, 5c; sheet zinc, 9c, f. o. b. Lasalle, in car lots of 600-pound casks; pig tin, 49.37c; Cookson's antimony, 10½c; other grades, 9c.

Old Metals.—The market for nonferrous scrap is changed but little. Some differences on several items are noted, but not to an extent to affect the market as a whole. Demand continues good, particularly for building up stocks.

We quote, dealers' selling prices, f. o. b. Chicago, as follows:

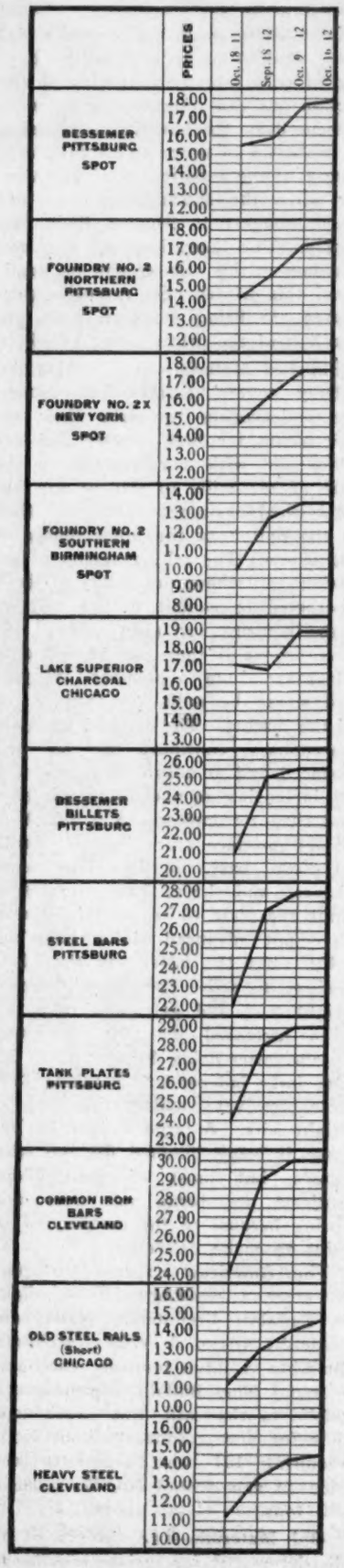
Copper wire, crucible shapes, 15¾c; copper bottoms, 15c; heavy red brass, 13½c; heavy yellow brass, 10c; No. 1 red brass borings, 12¼c; No. 1 yellow brass borings, 9¾c; brass clippings, 10c; lead pipe, 4⅝c; zinc scrap, 5¾c; tea lead, 4½c; No. 1 aluminum, 20c; No. 1 pewter, 36c; block tin pipe, 46c; tin foil, 42c; linotype dross, 3¼c; stereotype plates, 4¾c; stereotype dross, 5c; prime slab zinc dross, $112 a ton.

Canada Orders Cars

Toronto, Can., Oct. 15.—The Canadian government has awarded contracts for rolling stock for the Intercolonial Railway to the amount of about $800,000, nearly all of which went to the Canadian Car & Foundry Co., of Montreal. These included 500 steel-framed box cars at the price of $1,210 each; 100 Hart convertible cars of 40 tons capacity; 50 Otis all-spring dump cars; 20 refrigerator cars, price $2,058.50 each, and one 8,000-gallon tank car, price $2,695. The Preston Car & Coach Co., of Preston, Ont., obtained the contract for three baggage cars at $7,500 each. These orders are in addition to several large contracts for equipment previously announced.

The Triumph Electric Co., Oakley, Cincinnati, has just sold two 25-horsepower, two 50-horsepower, two 40-horsepower and one 60-horsepower reversing planer motors to the Lima Locomotive Corporation, Lima, O.

PRICE CHART



VERDICT FOR $240,000

Awarded in Re-trial of Danbury Hat Case.

Upon the second trial of the action which has been pending in the United States court for ten years, the jury in the famous Danbury anti-boycott suit, brought in a full verdict for the plaintiff of $80,000 at Hartford, Conn., on Oct. 11. As required by the anti-conspiracy clause of the Sherman law, Judge James L. Martin, of Brattleboro, Vt., before whom the second trial was held, trebled the amount of the verdict to $240,000 which, with the costs of $10,000, makes the largest verdict ever awarded by a Connecticut jury. The verdict eclipses the award in the original trial of December, 1909, which gave the plaintiff $74,000 or, when trebled, $224,000.

It has been said that the Danbury anti-boycott suit is the most important law suit between capital and labor ever tried in the American courts. The style of the suit was D. E. Loewe & Co., independent hat manufacturers of Danbury, Conn., versus Martin Lawler and 240 other members of the United Hatters of America, for damages resulting from a boycott declared against the products of the firm. The American Anti-Boycott Association backed the plaintiff in prosecuting the suit while the American Federation of Labor, with which the hatters' union is affiliated, vigorously supported the defense.

The Loewe factory was originally unionized, but in 1900 Deitrich E. Loewe, head of the business, declared he would brook no union interference in the plant, and upon his refusal to accede to the union's demands, a ruinous strike developed. Later, when the plant was finally gotten to running again, the effect of the American Federation of Labor's unfair list began to be felt, especially upon the Pacific coast, where numerous retail dealers were forced to discontinue business relations with the firm. The suit for damages followed.

In the original trial after a verdict for the plaintiff had been returned, a retrial was granted by the supreme court because the trial judge had directed the jury to confine its deliberations to considering what damages should be given and also because the higher court believed each individual defendant should be placed upon the witness stand.

The verdict now returned sustains the contention of the plaintiff that he and his workmen may legally do as they please without interference from the hatters' union or from the American Federation of Labor. A motion to overrule the verdict presented by the defendants' counsel was overruled and the court granted until Jan. 2, 1913, for the filing of an appeal to the supreme court of the United States.

The Late Wm. B. Jones

William B. Jones, former auditor of the Youngstown Sheet & Tube Co., Youngstown, O., whose death was noted last week in THE IRON TRADE REVIEW, was exceptionally successful in his chosen life work. Shortly after the company began to expand, following its formal organization as a maker of wrought iron specialties, Mr. Jones became auditor. His application of modern methods developed the system under which the concern is operating its large offices as smoothly as if of much less size and without the friction sometimes discerned in smaller offices. His health failed under the strain which he voluntarily and conscientiously put upon it, and his untimely demise is deeply regretted by thousands of friends in the Mahoning valley, where he and his family have been industrially prominent for years.

WM. B. JONES.

Stephen Halman, a former prominent manufacturer of Massachusetts, died at Swampscott, Mass., Oct. 13, aged 92 years. He reorganized the Holyoke Machine Co., Holyoke, Mass., and was largely identified with cotton manufacture. He was believed to have been the oldest member of the Massachusetts bar and the oldest alumnus of Williams College.

TEXAS ORES

Expected to be Ready for Eastern Shipment Early in Year.

Shipments from the iron ore deposits of the Eastern Texas Brown Ore Development Co. in eastern Texas will probably be inaugurated in January or early in the new year according to the present speed at which the development of this enterprise is now going forward. The new railroad line which will give this ore an outlet to the Gulf of Mexico at Port Bolivar is now completed and the mining equipment and plant are now being installed. Steamship arrangements for transporting the ore to the eastern Pennsylvania seaboard have been practically made.

According to those interested in the properties, it is estimated that the deposits will run into many million tons of a brown hematite non-Bessemer ore, which yields readily to smelting. This ore runs about 52 per cent in iron natural and around 0.09 per cent in phosphorus with a trace of sulphur. When the plant of the Eastern Texas company is in full operation, it is expected that capacity of 1,000 tons daily will be provided. About 35 miles distant from the Eastern Texas company properties, known as the Featherstone interests, is a second large holding with similar ore content of about half the size of the former.

The market for the eastern Texas ore developments is expected to be found principally among eastern Pennsylvania furnaces, to which shipment will be made by water from Port Bolivar to Philadelphia and Atlantic seaports. Arrangements have been made to offer a large block of this ore for next year's delivery to eastern Pennsylvania iron producers. Eventually the Birmingham district may absorb some of the output of the mines. The second large eastern Texas holding when it has been commercially developed is expected to market considerable of its tonnage at St. Louis and in the Cincinnati district with which it has rail connections.

Will Build Barges.—The Pittsburgh Crucible Steel Co., Pittsburgh, plans to build 20 barges to be used in hauling coal to the company's plant at Midland, Pa., on the Ohio river. Complete plans have not been announced, although a contract calling for 1,500 tons of steel plates has been placed with the American Bridge Co.

SLABBING MILL

Ordered From Mesta Machine Co. for Gary Plant.

An order, amounting to about $500,000, was placed last week with the Mesta Machine Co., Pittsburgh, by the Indiana Steel Co., for the large plant of the United States Steel Corporation at Gary, Ind.

The order consists of a complete slabbing mill, including shears, tables, etc., and two engines. The mill will be the largest of its kind ever built in this country, and also larger than any similar mill in Europe. It will be capable of taking ingots weighing 30 tons and rolling them into slabs. The engines for driving the mill will be of the compound reversing type, and when running at maximum speed will develop 50,000 horsepower.

The Mesta works, which are located at West Homestead, Pa., are especially equipped for handling heavy machinery of this type. The only limit to size of machinery they build is that which the railroads can handle. The Pennsylvania and New York Central railroads each have several special cars which have a carrying capacity of over 100 tons, which are often used for shipping the company's product.

At the present time, they are erecting in their shops a large engine of the compound reversing type, which will be used for driving a large blooming mill, for the Youngstown Sheet & Tube Co., Youngstown, O. The two bed-plates weight 120 tons each, while the total weight of the engine will be about 1,500,000 pounds.

The company now has sufficient orders on its books to run its plant to full capacity and the amount of business in sight almost insures the operation of the plant to full capacity for all of next year.

CONTRACTS PLACED

For New Plate Mill in East—Alan Wood Extension.

Final contracts have been placed by the Alan Wood Iron & Steel Co. for the equipment of a new light plate mill under construction at Ivy Rock, Pa. The new mill will have a capacity of rolling from No. 13 gage sheets up to light plates and in widths up to 84 inches. Power will be supplied by motor and the electric current will be obtained and transmitted from a power plant which will utilize the waste gases from the blast furnaces of the company across the Schuylkill river at Swedeland, Pa. The new mill will have an annual capacity of about 50,000 tons and it is expected will be in operation the latter part of next year. The Morgan Engineering Co. will furnish the new mill; the Babcock & Wilcox Co. the boilers; the Westinghouse Electric & Mfg. Co. the electrical equipment. The McClintic-Marshall Construction Co. is erecting the new building.

FALL MEETING

Of American Iron and Steel Institute at Pittsburgh.

The program for the fall meeting of the American Iron and Steel Institute, to be held at Pittsburgh on Friday, Oct. 25, has just been announced. The three sessions on that day will be held at the Hotel Schenley. The official program, with the addresses arranged in order of presentation, is as follows:

FORENOON SESSION.

President's address, Hon. Elbert H. Gary.

"The Buyer, from the Manufacturer's Standpoint," John L. Haines, assistant to the president, Jones & Laughlin Steel Co.

"The Technical Training of Salesmen," James M. Camp, general sales department, Carnegie Steel Co.

Discussion led by Eugene P. Thomas, president, United States Steel Products Co.

"The Use of Mayari Iron in Foundry Mixtures," Quincy Bent, assistant to the president, Maryland Steel Co.

"The Manufacture of Ordnance at the Bethlehem Steel Works," E. G. Grace, vice president and general manager, Bethlehem Steel Co.

Buffet Lunch

AFTERNOON SESSION.

"Coal Mine Ventilation in Connellsville Coke Region," Austin King, chief mine inspector, H. C. Frick Coke Co.

Discussion led by Wilson A. Luce, general manager, Ellsworth Collieries Co.

"Recent Developments in the Preparation of Iron Ores," J. W. H. Hamilton, mining engineer.

"Microscopic Analysis of Steel Sheets," C. Arthur White, American Sheet & Tin Plate Co.

"Electric Power Production and Distribution in Steel Works," Stewart C. Coey, engineer, Youngstown Sheet & Tube Co.

Discussion led by B. R. Shover, Brier Hill Steel Co.

EVENING SESSION.

One of the interesting features expected at the banquet is a moving picture exhibition, showing the processes of iron production "From Mine to Molder," recently shown by Rogers, Brown & Co. at Buffalo.

The proceedings on Saturday have not been definitely decided upon, but will probably consist of visits to several of the larger plants in that district.

Tool Builders Open Convention

New York, Oct. 16. (By wire.)—The eleventh annual convention of the National Machine Tool Builders' Association opened here today at the Hotel Astor. Several hundred manufacturers from all parts of the country are in attendance. At the morning session there was the registration of members and the reports of various committees. This afternoon, several papers will be read.

PROMPT COKE HIGHER

In Pittsburgh District—Heavy Buying of Pig Stops.

Pittsburgh, Oct. 17. (By wire.)—The market for prompt coke continues to stiffen. This morning $3.50, ovens, was paid for a small tonnage of prompt furnace coke and many manufacturers say that no coke can be obtained at less than this figure. Sellers in many instances are holding out for $4.25, ovens, on foundry fuel.

Heavy buying of all grades of pig iron during the last fortnight seems to have caused a brief lull in the market just at present. It is estimated that more than 160,000 tons of Bessemer and basic have been obtained by a few consumers during the last two weeks. A consumer in the valley district has purchased 2,000 tons of Bessemer at $17, valley furnace, for prompt shipment. No sales above this figure have been made.

Demand for iron and steel pipe for shipment before Dec. 1 continues fairly heavy. An order for 30 miles of various sizes of iron pipe has been distributed among several makers this week. The pipe involved in this contract is for West Virginia shipment. An inquiry for 75 miles of 16-inch pipe for Ohio shipment has not yet been closed.

Nut and Bolt Prices Advanced

Nut and bolt prices which have been rising steadily of late, have again been advanced about 5 per cent by the new schedule effective Oct. 15. Makers declare the steady advance in these lines is due to the increasing cost of steel bars and manufacturing material. The new schedule of prices is as follows:

Small carriage bolts, rolled thread, 75, 10 and 2½ off; small carriage bolts, cut threads, 75 and 7½ off; large carriage bolts, 70 and 5 off; small machine bolts, rolled threads, 75, 10 and 7½ off; small machine bolts, cut threads, 75, 10 and 2½ off; large machine bolts, 70 and 10 off; blank bolts, 70 and 10 off; bolt ends with hot pressed nuts, 70 and 10 off; coach and lag screws, 80 and 10 off; square nuts, $5.80 off list; hexagon nuts, $6.40 off.

George K. Elliott, chief chemist and metallurgist of the Lunkenheimer Co., Cincinnati, will deliver lectures during the present week, at Philadelphia, Baltimore and Reading, Pa., before local branches of the National Association of Steam Engineers.

J. W. Lewis, sales manager of the Triumph Electric Co., Oakley, Cincinnati, returned, Oct. 14, from a seven weeks' business trip through northwestern Canada and the Pacific coast.

Safeguarding the Employes of a Steel Plant

Rules and Regulations and Safety Devices Adopted by the Youngstown Sheet & Tube Co. to Prevent Accidents

A commemorative medal recently was awarded to the Youngstown Sheet & Tube Co., Youngstown, O., by the International Exposition of Hygiene held at Dresden, Germany, last year, for its exhibition of accident prevention signs, devices, etc. This exhibit consisted of a large number of photographs taken in various departments of the works of the Youngstown Sheet & Tube Co., and contained specimens of enameled signs, together with a few models of some of the more important accident prevention devices.

Although the company constantly sought to safeguard its employes, it was not until the latter part of 1909 that a systematic effort was made to prevent accidents in the company's works. The first important innovation was the compilation of a set of rules covering all departments which were issued to foremen, superintendents and skilled workmen. These rules were based on former experience and were intended to prevent accidents which had occurred previously. The laws of the state of Ohio also were carefully considered in their adoption, particularly in reference to the protection of machinery, the employment of minors, etc. These regulations embrace general instructions to superintendents and foremen and direct their attention to the responsibilities devolving upon them in safeguarding the employes under their control, and they are held responsible for accidents occurring in their departments caused by negligence on their part.

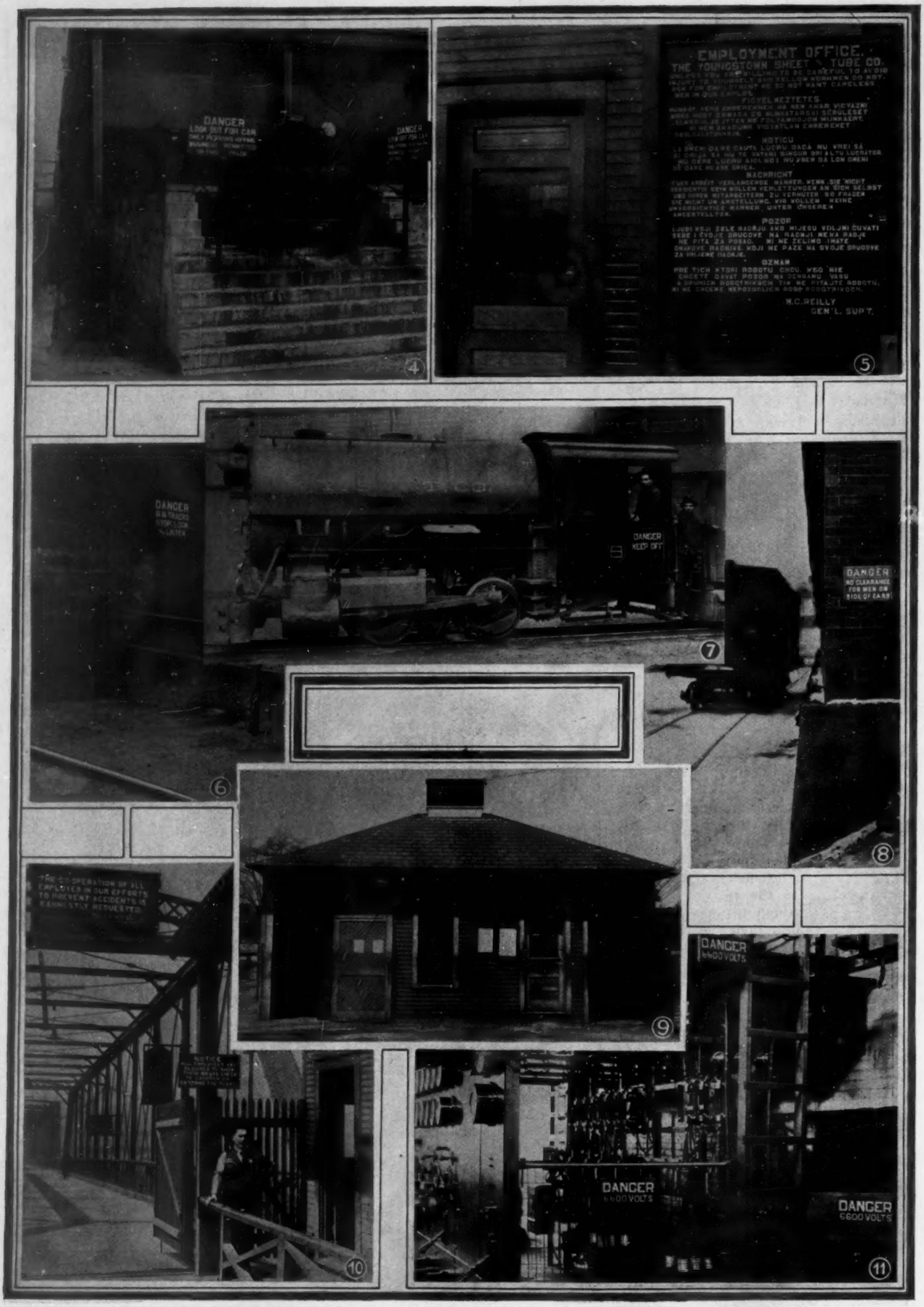
Members of the works' police department are instructed to aid in every possible way to prevent accidents and they are expected to familiarize themselves with all the rules to enable them to take cognizance intelligently of all dangerous places and to see that instructions are given to the proper authorities to have the defects remedied. The employment department co-operates in the safety work. Boys under 18 years of age are not employed and all such applicants must furnish a certificate of age signed by their parents or guardian, and acknowledgment from a school superintendent must also be presented that they have attended school the required length of time. Boys of tender age usually are not as careful as they should be, and do not appreciate the dangers of operating machinery. The applicant's physical condition also must be taken into consideration before his employment, and men suffering from defective eyesight, hearing, crippled in any way, or showing lack of ordinary intelligence, must not be employed.

In the accompanying illustrations are shown a large number of safeguards employed throughout the plant. At the approaches to the various departments of these works signs have been placed in conspicuous positions on which are expressed different maxims calling the attention of applicants for positions to the care that should be exercised to prevent accidents. At the employment office a sign in six languages reads as follows:

"Unless you are willing to be careful to avoid injury to yourself and fellow workmen, do not ask for employment. We do not want careless men in our employ."

At the entrance to the East Youngstown plant and also at the rod and wire department, signs have been placed, which are electrically-illuminated at night, and the maxims are changed frequently. The instructions given are concise and are worded so as to attract attention. In this way the company seeks to direct the attention of the men before they enter the works to the importance which is attached to safety and it is believed that these notices have been the means of preventing many accidents. Furthermore, at each entrance, when employes are going to work, policemen are stationed to observe closely their condition, and if they are found

SAFETY SIGNS AT THE PLANT OF THE YOUNGSTOWN SHEET & TUBE CO., YOUNGSTOWN, O.



ADDITIONAL SAFETY SIGNS AT THE YOUNGSTOWN SHEET & TUBE CO.'S PLANT

to be under the influence of liquor or other suspicious indications exist, they are not allowed to enter.

In addition, printed rules of a general or special nature are conspicuously displayed in all of the departments. One of these signs instructs the men to go to the emergency hospital immediately regardless of how slight the injury may be, in order to prevent infection. The employes also are requested to notify their foremen or superintendents of dangerous places connected with their work. On the electric cranes, framed notices or rules to crane operators are displayed, and similar rules are posted in the barb wire and fence departments. An effort has been made to place signs and safeguards at all points in the works that have proven dangerous or are believed to be dangerous.

A large amount of money has been expended on the installation of guards and shields over gears, shafting, belting, etc., and platforms, stairways, railings, pipe coverings and other safeguards also are provided. Narrow clearance signs with red lights at night direct the attention of railroad crews to narrow clearances. In addition to these signs, bulletins have been posted in the transportation office calling the attention of train crews to the location of all narrow clearances throughout the works. Formerly, when the company capped ingot molds, a large number of serious accidents occurred in the ingot casting department, which were caused by gas pockets forming in the hot metal as it solidified, resulting in explosions, especially when the caps were being removed. These accidents have been entirely eliminated by the use of open top molds.

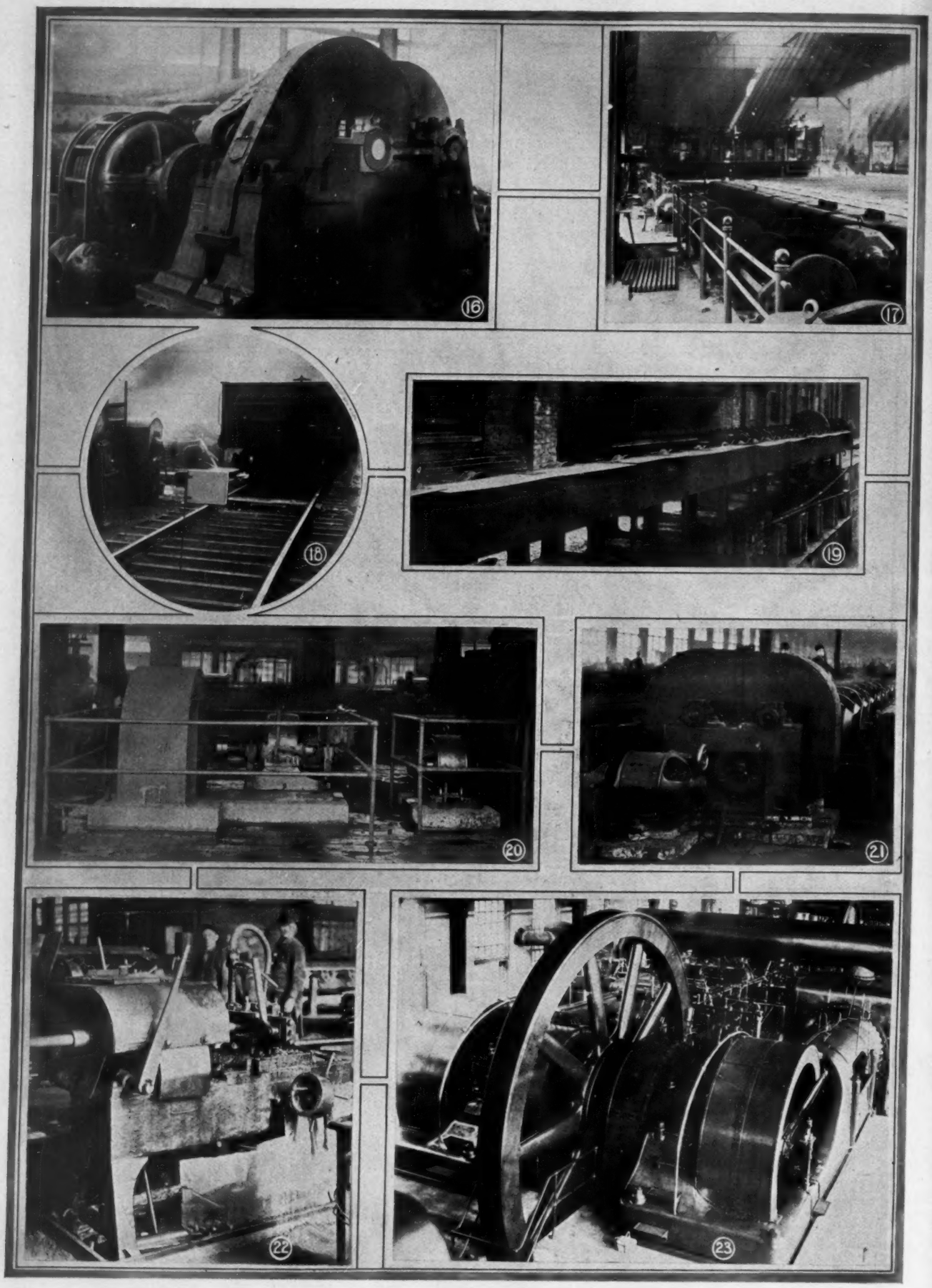
Furthermore, a number of serious accidents were caused by lamp tenders trimming stationary arc lights from cranes. Occasionally the crane operators moved their cranes when the trimmers were at work, and serious accidents resulted. This source of danger has been removed by arranging the lights so that they can be lowered and trimmed from the ground. All of the electricians and mechanicians who have occasion to work on the cranes and crane runways are provided with a chain and lock by which they lock the switch of the crane. The crane operator then is unable to operate the crane until the chain has been removed by the men making repairs.

A number of cranes also have been equipped with limit switches, invented by one of the company's electricians, which prevent running the blocks too high. These switches are positive in operation.

Shafts and gears of conveying tables are safeguarded with shields that entirely cover operating parts. The workmen are absolutely protected from the machinery while oiling and moving about these tables. Molders, puddlers and other employes who are liable to have their feet seriously burned by splashes of molten metal and cinders, are compelled to wear congress shoes furnished by the company, which can be easily removed in case of accident. Other employes who work in departments where injuries from flying particles of metal are frequent, are provided with goggles furnished by the company. All of the employes at blast furnaces, cupolas, and emery wheel operators are furnished with these goggles.

All of the accident and safety work is in charge of the accident department, as its officials are familiar with the causes of all casualties and are in a better position to make suggestions regarding their possible prevention

A NOTE OF CAUTION CONSTANTLY MEETS THE WORKMAN'S EYE AT THE WORKS OF THE YOUNGSTOWN SHEET & TUBE CO.



SAFETY DEVICES INSTALLED BY THE YOUNGSTOWN SHEET & TUBE CO.

than those who merely make casual inspections of the works. However, in addition to this department, safety committees are appointed by the general superintendent at different periods whose duty it is to act in conjunction with the accident and safety department and to make a thorough inspection of the entire works two or three times a year. This serves as a double check on the work, the safety department looking out for dangerous places at all times, while the special committees observe places of danger that are possibly overlooked by this department, as well as superintendents and foremen.

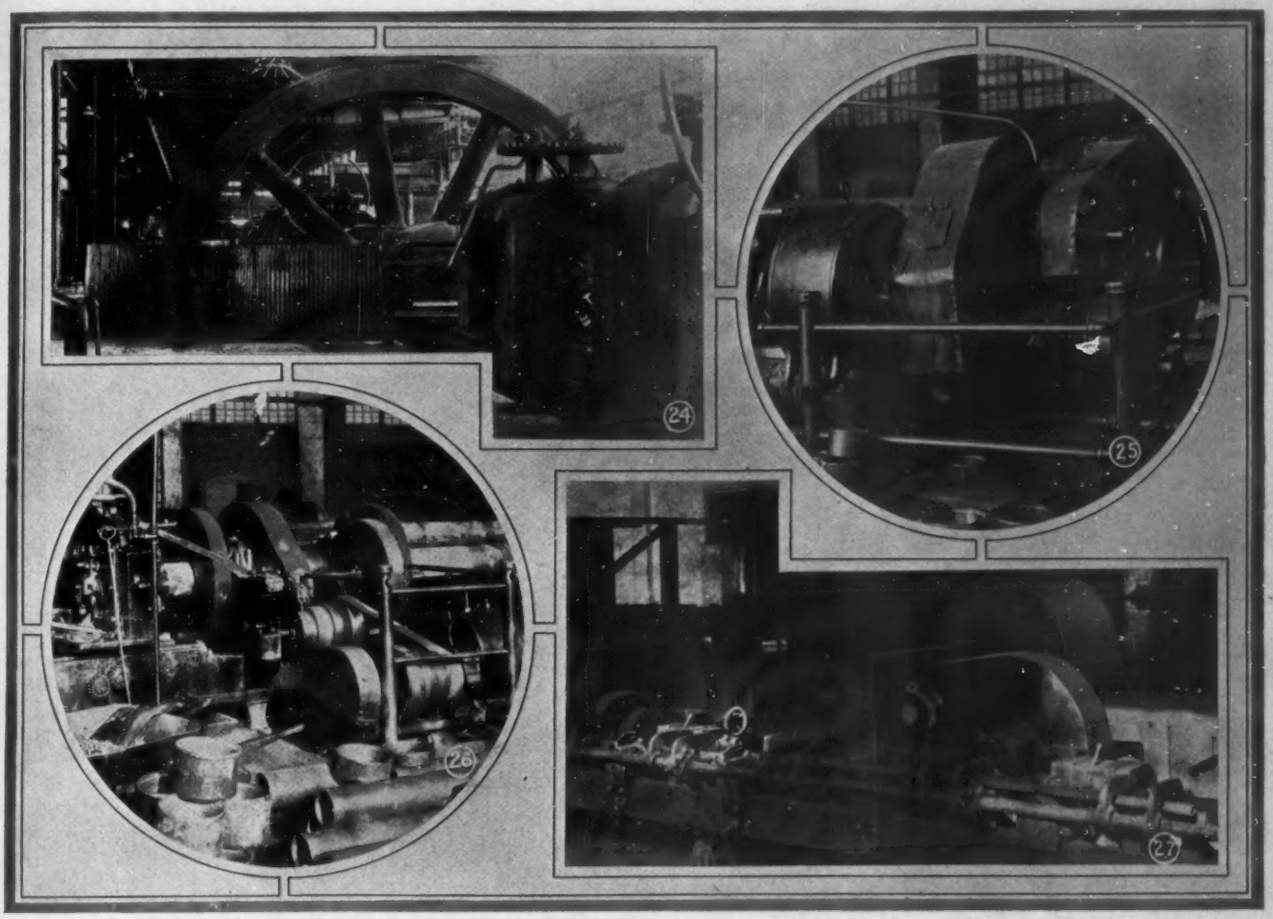
All recommendations for the installation of safety devices are made by the safety department, and are forwarded to the general superintendent for his approval. If approved, they are then transmitted to the superintendent of the department to which the recommendation applies, with such suggestions as are necessary in the circumstances. The department superintendent either carries out the recommendation, gives reasons for not doing so, or suggests changes which he considers advisable. The safety department also is notified so that its records may be kept complete, and to enable it to take up the matter further if the suggestion has not been carried out and is considered a feasible one. If the recommendation involves a large expenditure of money and requires plans and estimates of cost, it is turned over to the chief engineer for attention. If the recommendation is not carried out promptly, the safety department immediately notifies the general superintendent of this fact. It is the policy of the safety department to consult with the department superintendents regarding the recommendations which are to be made, so that the department heads can offer suggestions or demonstrate their impracticability The membership of the safety committees consist of superintendents, their assistants and skilled men employed in various departments of the plant. The question of safety has been given particular attention in the design of the company's new open-hearth plant, which is now under construction, and all buildings and machinery are being equipped with every known practical safety device.

The accompanying illustrations of signs and safety devices in the various departments of the Youngstown Sheet & Tube Co.'s works are described as follows:

Fig. 1 illustrates covers over cable pulleys of the billet mill hot beds. These shields are made of steel plate and can be removed readily when necessary.

Fig. 2 is a view of the pig casting machine and employes are warned against walking underneath this equipment. It also will be noted that the stairway has a railing side with guards at the landings.

Fig. 3 shows guards over motor, motor gears and bevel gears, operating the conveying rolls in the tube mill.



INGENIOUS CONTRIVANCE FOR THE PREVENTION OF ACCIDENTS

Fig. 4 shows signs at the west end of the electric car track at No. 9 lap-weld tube mill. It will also be noted that the motor gears are safeguarded by a shield.

Fig. 5 illustrates the sign at the employment office of the East Youngstown Works, which is conspicuously placed so it can be read readily by applicants for positions. It will be noted that the request for co-operation in the prevention of accidents is printed in six languages. This sign reads as follows: "Unless

you are willing to be careful to avoid injury to yourself and fellow workmen, do not ask for employment. We do not want careless men in our employ."

Fig. 6 shows the danger sign and railing to prevent employes from crossing tracks at this point.

Fig. 7 shows one of the company's saddle tank locomotives with a danger sign painted on the cab warning employes other than the train crews to keep off. Many accidents have resulted from employes riding on the steps of locomotive cabs and they are cautioned against this practice.

Fig. 8 is a view of another narrow clearance sign located at a point where the tracks are close to the side of a building. There is not sufficient room between the building and the cars to permit the trackmen to ride on the side steps.

Fig. 9 shows an illuminated sign at the entrance to the rod and wire department. "Let us all boost for safety" is the company's suggestion to its employes.

Fig. 10 shows the illuminated sign at the entrance to the East Youngstown plant. On top of the bridge is an earnest request for the co-operation of the employes in the company's efforts to prevent accidents.

Fig. 11 shows a number of danger signs on the switchboard in the electric power station.

Fig. 12 illustrates one of the many notices posted throughout the yard warning engineers to start and continue to blow the whistle of the locomotive for the next curve. The engineers also are cautioned to ring the bell while running around curves.

Fig. 13 is a view of the danger sign at the tube mill urging employes to look out for the transfer.

Fig. 14 shows one of the many railroad signs located throughout the yards and works. This sign is outside the boiler shop.

Fig. 15 shows small clearance signs leading to tracks between the butt-weld buildings of the tube mill department. Brakemen are warned against riding on the sides of cars where these small clearances occur.

Fig. 16 shows a shield over motor gears in the tube mill.

Fig. 17 is a view of No. 2 skelp mill showing railings around shafting and enclosed gears.

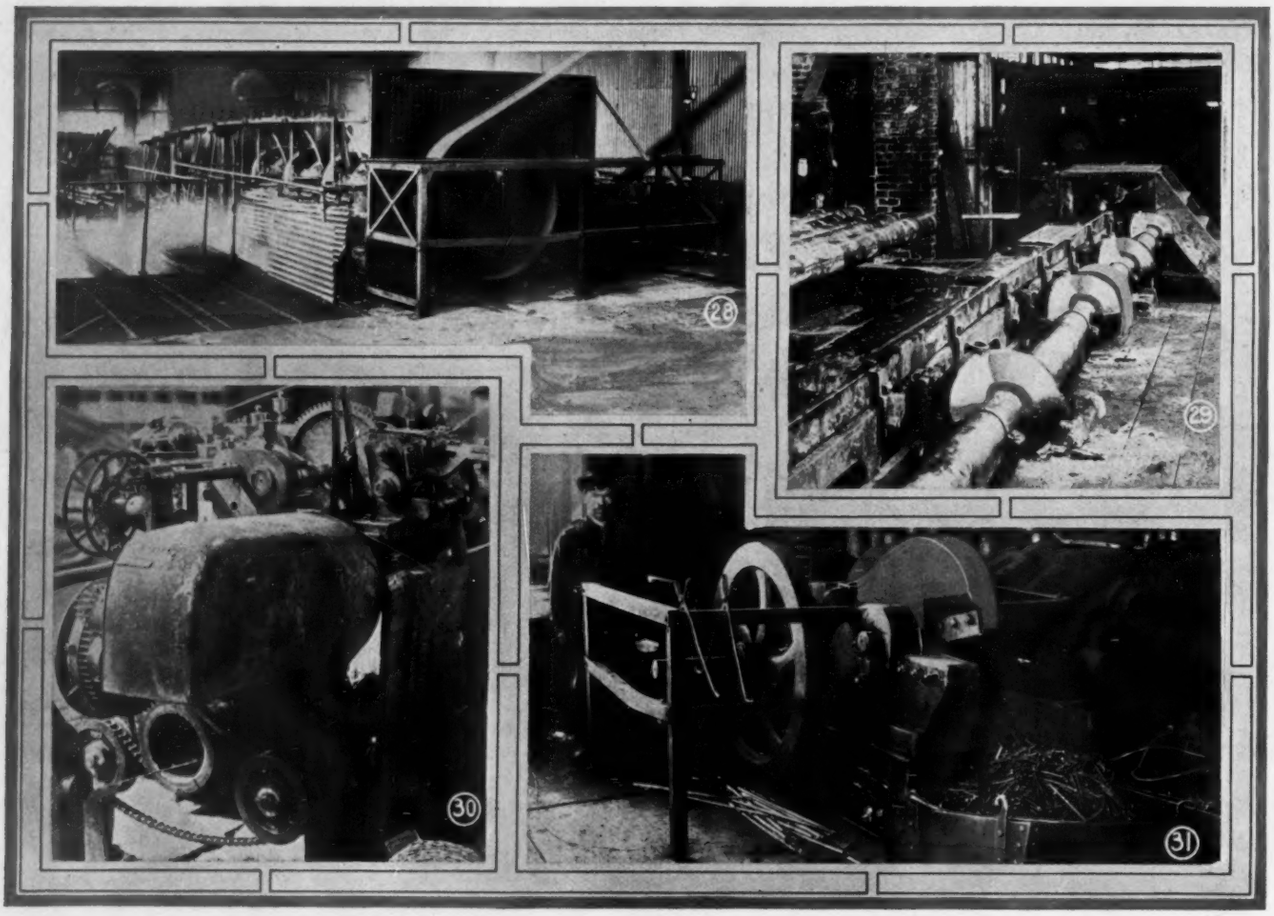
Fig. 18 is a view of a danger flag placed on a track when the latter is in use. This notice is intended to warn train crews against shunting cars into those already on the track.

Fig. 19 is another view of the conveyor rolls in the tube mill which shows the guard over the gears.

Fig. 20 shows railings around motors and fan in the sheet mill department.

Fig. 21 shows a specimen of shields and covers on the butt-weld cooling racks in the tube mill.

Fig. 22 is a pipe threading machine safeguarded with a shield.



ADDITIONAL SAFETY DEVICES INSTALLED BY THE YOUNGSTOWN SHEET & TUBE CO.

Fig. 23 shows one of the blast furnace blowing engines, and it will be noted that all of the moving parts are covered by shields and railings located at convenient points to enable the engineer and oilers to move the engine in safety.

Fig. 24 illustrates a guard around the flywheel pit in the sheet mill department.

Fig. 25 illustrates the method of protecting motor gears, pulleys and belting in the tube mill.

Fig. 26 is a view in the tube mill illustrating specimens of guards of pipe threading machines and railings

around belting, etc. The small gears illustrated are hand-operated.

Fig. 27 is another view in the tube mill department, showing the method of guarding gears on the butt-weld furnace conveyor.

Fig. 28 illustrates the method of guarding various machines in the rod mill. The large pulley is safeguarded by a railing as well as a shield.

Fig. 29 is a view of No. 10 lap-weld mill and shows guards on conveying rolls, gears and shafting.

Fig. 30 shows the method of guarding barb wire machines.

Fig. 31 illustrates the method of safeguarding the flywheel of a crocodile shear with a railing. This machine is located in the rod mill.

"Boost for Safety" is the title of a 64-page booklet issued by the company, which contains rules and regulations for the government of employes. It contains instructions for superintendents and foremen, as well as those applying to the employes of various departments. The rules governing the blast furnace, open-hearth, rod and wire departments, Bessemer steel plant, and the sheet and tube mills, follow:

Blast Furnace Department

Employes working in stock bins, ore yard, or in any other place where ore is being moved, are warned not to get under ore bin rollers, cars, buckets, etc., as ore or other contents is liable to fall on them.

Employes are forbidden to go or stand near the ore piles while blasting operations are being performed.

Employes, other than those engaged in the work, are forbidden to stand in close proximity to furnaces while they are being tapped.

Employes are warned of the danger of furnace gases, which are continually escaping, and must use the utmost care to avoid coming in contact with or inhaling them.

The furnace foreman will at all times ascertain the condition of a furnace as to safety of taking or sending men to inspect or work on tops of furnaces, and at no time shall one man go on top of a furnace alone.

Employes are warned, and must keep away, and not catch hold or tread on feed rails running underneath and parallel with boardwalk over stock bins, as they are charged with electricity which furnishes power to overhead stock car which distributes ore and other material to bins. Employes are also warned regarding angle irons which run above track on south side of ore stockyard, as these angles are also charged with electricity, which carries the power to operate ore bridges and car dumper.

Employes are warned to use care to see that no snow or ice is in any ladle, pot or other receptacle intended for the use of molten metal, and not to allow moisture in any form to accumulate therein, and are forbidden to jostle or distract fellow employes while carrying or working with molten metal, and attention is called to the danger of pouring or spilling molten metal upon any cold, damp, wet or rusty surface, and must assume the consequences of all explosions resulting from the violation of this rule.

Employes are cautioned not to wear laced or buttoned shoes while engaged in or about the blast furnace foundry, but must provide themselves with shoes that can be easily removed in case of emergency to prevent being burned by molten metal.

Employes must not use boxes, barrels, or other inflammable material while pouring metal or while in or around where molten metal is being poured.

In catching iron, men must be instructed to cut the stream so that it will be towards the furnace or cupola. To cut the stream away from the furnace is always dangerous and results in many serious burns to the feet and legs.

In molding deep flask jobs where long wooden guides are used, they should be taken off when not in use and destroyed, as nails protruding from the guides are liable to injure workmen's feet.

In pouring iron into molds, workmen must be instructed not to have their feet too near the mold. Also be careful not to get in such a position that they cannot get away quickly should the metal break through the mold. Many serious burns have been caused in this way.

Workmen must not fill ladles too full, as the hot metal is liable to spill and cause serious injury.

Ladles must be inspected every day to see that there are no thin places through which the hot metal can break and burn their legs.

Open-Hearth Department

Stock yard employes must be careful not to pass under magnets carrying material for the pan cars.

Every one employed in and about the stock yard must be on the lookout for engines and cars, while shifting is going on.

Employes are notified to be on the lookout for charging machines and pan cars upon the charging floor.

When hot metal is being handled by crane, do not attempt to pass between the ladle and the furnaces.

When hot metal is being poured into the furnaces, do not approach within 20 feet of the stream of metal.

Employes are notified to be on the watch when passing from the rear of furnaces to the charging floor.

There is no clearance for a man between furnace binding and the pan cars, or between the pan cars and the charging machine, or between charging machine and hot metal ladle.

In the pouring pit, do not stand opposite the tap hole.

All engaged upon pouring platform must watch out for splashing metal.

Foreman must inspect all chains and slings to see that same are in proper condition and of sufficient size to do the work required of them.

Do not dump cinder pot in less than four hours after tapping heat.

Every one is cautioned to keep away from pit while ladle of steel is being hoisted and carried to the pouring floor.

Rod Mill

All employes while working on or about the roll train, or having occasion to pass alongside of same, must always be on the lookout for rods which are passing through the rolls to the reels, as the rods are liable to fly out at any time.

Employes must not get in between the pinions and rolls while same are in motion, as this is a very dangerous practice and the chances of getting injured or killed are very great.

Employes are cautioned and must keep away from the belt drive while in operation, as there is danger of the belt breaking.

Employes working on pusher rod at continuous furnace must always be careful that they do not get their hands caught in rolls while pushing cut billets, and always look and see that notch on handle is in right position.

Cleaning House

Employes must be careful in the handling of sulphuric acid and use every precaution while working around the acid and lime tubs.

Employes working at rod baker must not stay in too long, as there is danger of being overcome and suffocated.

Men are cautioned, and must not stand under rods when putting pins (7 coils) on truck as there is danger of them falling down.

Wire Mill

The floors of the different departments must be kept clean of scrap rods and wire, and workmen must not be allowed to throw pieces of wire behind them when cutting off end, as they are liable to strike some one in the eye or cause some one to trip over same, as well as give the department an unsightly appearance.

Emergency stops are placed in the different departments to protect the lives of workmen. These stops consist of a rope or strand of wire which runs to the switch, which rope or wire if pulled will stop the motor. The ropes or wires should not be used to hang anything on.

Wire drawers must "always keep their feet on the floor," and when bundle of rod becomes tangled at wire drawing block, must not put their feet on the treadle to stop the block; simply let the block go ahead and when the tangle or loop reaches the die the rod will break; then it is perfectly safe to stop the block.

Wire drawers must always be careful in handling wire on the block while in operation, as there is danger of glove, hand leather or hand getting caught and pulling the operator around the block.

Wire drawers must always be careful when stopping the block to see that the treadle is securely fastened in the proper catch or notch provided for the purpose.

Employes are warned, and must not attempt to wipe with waste or any other material, any machinery while

in operation. Cleaning the machine must be done while same is idle.

Cranemen must be careful not to hoist trucks of wire or rods until man on floor gives orders to go ahead, and when carrying loads around mill to carry same high enough so as not to endanger anyone. When returning, he must carry chains high enough so as to clear workmen and machinery on floor.

When pulling loads of wire rods from the bakers by crane not more than 16 feet of chain shall be used.

Cranemen must be careful at weighing-up time not to lower a load of wire on top of another truck; also see that the scales are clean and clear before lowering load.

If the air compressor requires stopping to make an adjustment or repair, the head millwright or the wire mill foreman should be notified before doing so, so that the wire drawers will be cautioned regarding the lack of air, and will be able to operate their blocks without endangering themselves.

The motor drives on benches must not be started by any electrician or other workman without first notifying the head millwright, as there might be some one working in pit of particular bench which motor drives.

Wire drawers must not leave block when in operation and must not have bale of bundling wire hanging on safety die stand box.

Wire drawers must also be instructed not to attempt to strip wire from blocks until same has absolutely stopped.

Nail Mill

Nail machine operators and helpers must be careful in shifting belts, as there is danger of getting caught in same.

Operators of fence staple machines must be careful and not lift shield of machine while same is in operation, as there is danger of staples striking them in the face.

Operators of nail wire barbing machines must be careful and not get their fingers caught in the barbing rolls while the machine is in operation; also must be careful and see that the belt is on the loose pulley before stripping the wire from the block.

Employes working at or around tumbling barrels must be careful and not step into the pit when the barrel is revolving.

Employes are strictly forbidden to operate the electric elevator except those who are employed on same, and must be very careful in its operation.

Men engaged piling kegs of nails must be careful that the kegs are piled regularly and straight. They will also be on the lookout for danger of kegs falling. Kegs must be braced when deemed necessary. Employes must not pile kegs on a floor which is not secure or in any way broken. Floors in such condition should be immediately reported to the superintendent or foreman, so that repairs can be promptly made. Kegs must not be piled more than 12-high.

Employes are warned to be very careful while walking around nail department as it is very difficult to keep stray nails off the floor.

Whenever an employe is directed to work in close proximity to any track for the passage of cars, cranes or other machinery, the man in charge of work must, before commencing such work, notify the operator of such crane, locomotive or other machinery that work is to be done on or about where said cranes, locomotives or other machines are operated, and to look out for said workman, and if found necessary will see to it that same are not operated, or place a man to look out and give warning to both operator and men, so as to avoid accident. Whenever an employe is directed to work on or near a crane runway another employe must be stationed in the cage of the crane operating on said runway, and it shall be his duty to see that the crane is not moved except by direction of the foreman in charge of the men working on the runway.

Operator of nail machine must see that his helper keeps nails cleaned-up around machine and must not allow helper to go up on line shaft to put on belts, as this is the operator's duty.

In case an operator finds it necessary to place belt on line shaft he must use the stairs and not the elevator at the tumbler platform.

Operators must be careful when working around the line shaft which drives the tumblers and not get caught in the arms of the clutch pulleys which drive the tumblers.

Employes working in this department must not throw nails or any other material at any workman, as they are liable to be caught in spokes of fly-wheels and be thrown with great force against other workmen which might inflict serious injuries.

In case any workman should get caught in machine or belt, or in case of an emergency, the workmen in this department must be instructed to pull rope which runs over all nail machines, and in this way stop the motor which drives the machines.

Employes working around nail mill elevator must not start same without first giving proper signal.

Bessemer Steel Plant

Unloaders of pig iron must use care in unloading the pigs from cars on trestles that they do not injure the metal wheelers below while in the performance of their work.

Metal unloaders are strictly prohibited from climbing up or down the piles of metal, as this is a very dangerous practice.

Pig metal and scrap wheelers must be careful to see that they do not place themselves in dangerous positions while loading metal and scrap on their buggies, and be on the lookout for metal falling when being unloaded by crane magnet or by hand from cars.

Metal wheelers must see that they load pig iron and other material on their buggies so that the load is properly balanced.

Wheelers and their helpers in taking their buggies on or off the platforms of hoists must see that the platforms of hoists are level with the floors of building before doing so.

Before metal has been poured in ingot mold the steel pourer must see to it that the mold is in good condition, and especially that the tops of same are intact when closed top molds are used.

The hot baller, when placing caps on molds after metal has been poured into them, must see that the caps used are in good condition, and must not use any caps that are cracked, or otherwise defective, whereby they do not cover the mouth of the mold. He must also see to it that they are keyed down and wedges driven tightly, and that the sand is put on.

All heats must be allowed to stand in the molds a sufficient length of time before caps are taken off.

Foremen of converting mill, together with hot baller and helper, must instruct the laborers employed on the pouring platform to take the caps off and watch them to see that they fully understand the manner in which they are to do the work, and especially observe closely that the caps are removed from the molds in the order in which they are poured. The key should be loosened to see whether or not the metal has set. If the metal has not set the cap will be raised up against the wedge and key. There cannot be too much care used in the strict observance of this rule, and proper instructions being given to the men hired to do this work.

Employes are forbidden to walk under or pass in front of a vessel while heat is being turned down or during its turning up.

Employes must keep a safe distance away from a vessel which is blowing its first heat on new bottom, and are also warned against passing under or near a pouring crane while heat is being poured.

Employes are forbidden to go on any of the floors of cupola, mixer building and converting mill building, or ride on any of the elevators or hoists unless their employment requires it.

Employes are warned, and must keep away from the cupola building when cupola bottoms are being dropped, only regular employes necessary to do this work being allowed in the cupola building or near it while such work is being done.

All employes of the plant, with the exception of those having work to do in the mixer building, must be instructed to keep out of and away from this building at all times, as on account of large quantities of molten metal being poured into the mixers and pig casting machine, handling of scrap, dumping and cleaning ladles, and the extreme elevation of the cranes, from which the dropping of a nut or bolt might have fatal result, these premises are very dangerous. Foremen and workmen are warned to take extraordinary precaution at all times, and particularly to keep away as far as possible at times when molten metal is being handled by the cranes.

Employes are warned against standing or passing under or near ladle or mixer while molten metal is being poured in or out, and no temporary

shed or shelter will be permitted in mixer building.

Employes tapping and stopping cupolas should use great caution not to spatter hot metal.

All employes must be prohibited from standing in close proximity to skull cracker while same is in operation.

Shovels are supplied for taking ball stuff from wet pans in bottom house, and employes must be warned from taking same out with their hands or from the side of the pan, whereby their hands are liable to be dragged in under the crusher.

Stool cleaners must clean the stools at a place designated on the south track of the ingot stripper building, either at the east or west end of said building.

Stool cleaners must be strictly forbidden to cross over this track and follow the cars up on the inner track, from where the ingots are stripped and loaded into the pit furnaces.

All employes working in or around where ingots are being stripped must be on the watch for ingots that are liable to fall off the cars, or molds dropping from the strippers.

All employes must be warned, and must not go on the ingot buggy track or cross same without first warning the ingot buggy operator and paying particular attention that same is not in operation.

All employes must be warned, and must not get too close to blooming mill rolls, especially during the first and second pass of an ingot.

Employes working at cobble shears while a cut is being made must get out of the way, as cobble is liable to swing around on the crane chain and injure them.

Men working at bloom-butt conveyor must look out for butts falling from the conveyor, striking the bar which they are using or falling over the side of the car into which the butts should fall.

Workmen must be cautioned to carefully examine any ladles or skimmers and see that they are not damp or wet. A damp or wet ladle or skimmer coming in contact with hot metal is liable to cause an explosion.

Workmen must not fill ladles too full, as the hot metal is liable to spill and cause serious injury.

Ladles must be inspected every day to see that there are no thin places through which the hot iron is liable to break and burn their legs.

Puddle Mill

Puddlers are cautioned not to fire the furnace without slacking the blast sufficiently to keep the flames from the fire chamber.

Puddlers are cautioned not to place the hot taps near water. They must also use care in dumping the tap buggies and not allow cinder to come in contact with damp ground or water.

Sheet Mill Department

Employes walking along dinkey track back of furnaces are cautioned to keep a strict lookout for engines and cars passing over same.

When pulling annealing boxes from furnaces, employes must keep away from wire cable as far as possible, as there is danger of same breaking.

In pushing trucks loaded with sheets or any other material workmen must be instructed not to push on the sides of the trucks, as in case of a wheel breaking or a defect in platform or flooring the load is liable to fall on them.

Galvanizing Department

Employes are warned of the danger of getting burned by acids or splashes of lead or spelter from vats, and must exercise particular care and not fall into same, and must not put anything cold in them, as this is very dangerous and liable to cause an explosion.

In unloading acid from tank cars the man doing this work must be instructed to look on the side of the car to see that the air pressure is not allowed to exceed that marked on the car. An air pressure of 25 pounds is sufficient for all ordinary conditions.

Tube Mill Department

Threaders are warned not to tighten grips on threading machines while same are in motion. Always inspect and see that grips are tightened up before starting machine.

Testers, especially on lap weld pipe, must place the pipe in the tester so that the lap will be on top, as in case of a leak, which usually comes in the weld, the water will be thrown towards the roof.

Employes whose duties require them to be near the hydraulic or air testers must bear in mind, while serious accidents are few, there is always a certain element of danger connected with their operation. The pipe, being tested to several thousand pounds hydraulic pressure, or to 400 or 500 pounds air pressure, is necessarily under a very severe strain, and the force of air or water, when suddenly released through a defective weld or other defect in the pipe, is strong enough to shatter a 2-inch pipe. Testers are particularly warned not to get in front of the vent pipe where air is blown out after the pipe is tested as an air pressure of 300 pounds will kill or maim anybody coming in contact with it.

Employes of the threading floors and other departments where electric traveling cranes are in use must be warned of the danger of riding on loads being carried by cranes, and should be instructed not to ride on same.

Workmen must not throw waste or any other light material at anyone, as it attracts fellow workmen's attention from their work or other duties, and might result in fellow workmen being seriously injured.

Socket Shop

When changing or working around hot expander plugs workmen must be instructed to see that the machine is blocked so that the heads will not come together and crush the arms or hands of workmen.

Gasmen or any employes entering socket furnace pits must station a man at manhole to guard against anyone falling into pit, or place railings around the manhole, which must not be removed until work is completed.

Employes piling couplings or rings must see that same are piled safely and straight, and not exceed a reasonable height, which should be governed by the size of the couplings being piled.

The Youngstown Sheet & Tube Co. also gives its employes voluntary relief and the entire amount of money required to carry out the plan is furnished by the company, no contributions whatever being made by the employes. Regardless of whether or not there is liability on the part of the company, relief funds in various amounts are paid, and it is not necessary for any injured employe or his representative to retain legal assistance for the purpose of collecting from the company the relief to which he is entitled. Single men who have been five years or less in the service of the company receive 35 per cent of the daily wage they were receiving at the time of the accident. For each additional year of service, 2 per cent is added. In no case, however, shall single men receive more than $1.50 per day. Married men who have been in the service of the company five years or less receive 50 per cent of the daily wage that they were paid at the time of the accident. For each additional year of service above five years, 2 per cent is added to the relief. For each child under 16 years, 5 per cent is added, but in no case shall this relief exceed $2 per day.

Permanent Disability Reliefs

The following relief is paid for permanent disability: For loss of a hand, 12 months' wages; for loss of an arm, 18 months' wages; for loss of a foot, 9 months' wages; for loss of a leg, 12 months' wages, and for the loss of one eye, 6 months' wages. In the case of married men, fatally injured, who have been in the service of the company five years or less and leaving widows, or children under 16 years of age, the company will pay relief to an amount equal to 18 months' wages on the deceased employe. For each additional year of service above five years, 3 per cent shall be added to this relief, and for each child under 16 years, 10 per cent is added. In no case, however, shall this death relief exceed $3,000, and in addition, the company pays reasonable funeral expenses, not to exceed $100.

It is estimated that 7,500 pounds of zinc are passing into the atmosphere daily in the form of zinc oxide from the stacks of the brass-casting shops in Waterbury, Conn.

A High-Speed Power Hack Saw

A new type of hack saw, manufactured by E. C. Atkins & Co., Indianapolis, is shown in the accompanying illustrations. A notable feature of the new machine is the heavy and rigid construction, in which it resembles other modern metal-working tools. The device for raising the blades on the non-cutting stroke, now employed, avoids the dulling of the blade by dragging in the kerf, and consists of a friction grip working on a heavy upright bar, adjusted by a counterbalancing weight. The arrangement of this feature, which is easy to operate, is shown in Fig. 2.

The demand for high speed necessitates a lubricating system, in order that the foot travel of the blade may be doubled, and this equipment includes a pump, tank, bed pan and pipes. The maximum speed which is possible in cutting large sizes of iron and soft steel cannot be used to advantage in cutting hard tool steel and small sizes. This has led to the adoption of a two-speed pulley, which provides for a difference of 30 strokes per minute. The possibilities of the machine are said to be limited by what the blade will stand and one of the claims made is the large saving in blades resulting from the form of construction. Practically the full length of the blade is employed. The machine embodies the feature of the company's earlier saws, in which links attached to the frame are used, permitting the length of the stroke to be regulated automatically by the size of the material held in the vise.

This saw has been standardized for motor drive, either direct or alternating current. In Fig. 1, is shown a direct-current motor, resting on a special bracket and connected by a silent chain running over hardened tool steel gears. The speed is controlled by a regulator attached to the bracket, enabling the operator to run at any speed desired, from the minimum of 50 strokes per minute, to 100 strokes, by small graduations. For alternating current, it is necessary to use a back-geared motor with a cone pulley, the latter being connected by a belt with the cone pulley on the machine.

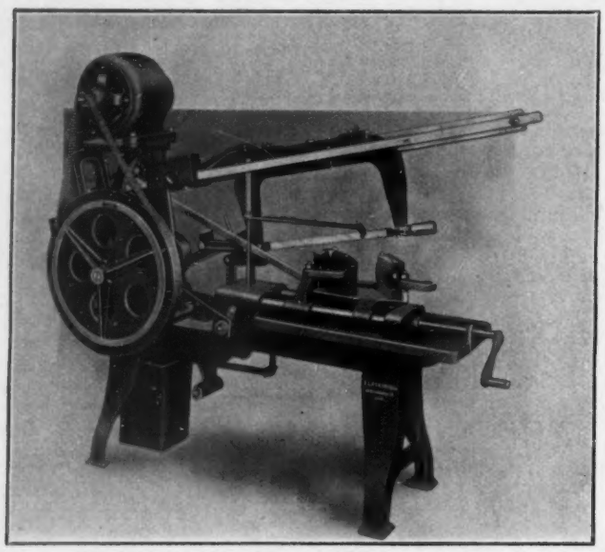


FIG. 1—POWER HACK SAW DRIVEN BY DIRECT CURRENT MOTOR

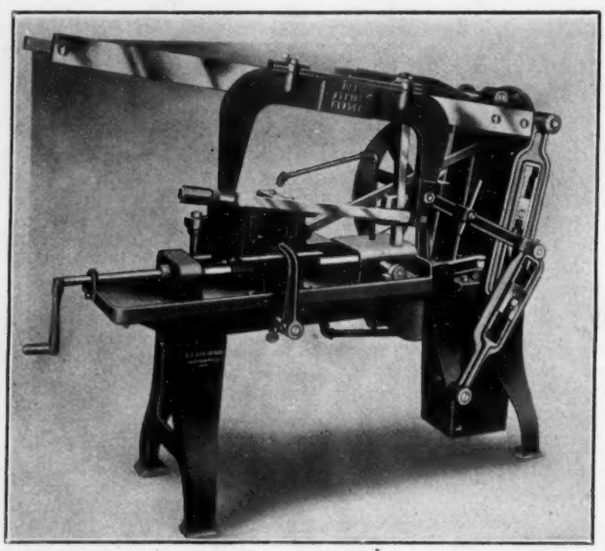


FIG. 2—HACK SAW, SHOWING BLADE-RAISING DEVICE

Largest Testing Machine

The largest testing machine in the world was placed in commission recently in the testing material laboratory of the bureau of standards, at Pittsburgh. The machine was designed by Tinius Olsen, Philadelphia, and has a capacity of 10,000,000 pounds. In its first performance, it broke a brick column, 4 feet square and 12 feet high, under a load of 6,580,000 pounds. The dimensions of this machine will permit it to test a 60-foot column vertically, and the distance between the tension screws, 6 feet, will make possible the testing of very large columns and slabs; by placing an extension table on the lower platen, the largest beams can also be broken.

The upper of the two large heads is held on the long tension screws by four gear nuts which are simultaneously operated through gearing. A large motor placed on the head raises it up or lowers it to accommodate different lengths of columns. The cylinder, ram and lower platen are mounted on the lower head. Each of the heads weighs about 30 tons and the straining screws are 13½ inches in diameter. It was necessary to design a new packing to hold the great pressure and to permit the friction to be controlled. With this packing, the friction against the movable ram becomes a factor which varies directly with the pressure. The ram receives the pressure through a variable stroke pump, operated by a 15-horsepower variable speed motor, with which any speed can be obtained. The screw beam reads directly to 2,000,000 pounds by the 100-pound marks on the dial, and with end weights to 10,000,000 pounds. The guiding of the upper head in itself was difficult to accomplish, considering the extreme height to which the machine can be lengthened. A guide frame connects the screws at the top, and is connected directly to the building.

Internal Combustion Locomotive

An internal combustion locomotive is being built for test on the Reading railroad, and will contain a 550-horsepower, six-cylinder gasoline engine, suitable for either high-grade or low-ignition fuel oil. It is claimed that this locomotive will be capable of negotiating grades and carrying loads as great as a small steam locomotive and that the direct drive of the steam locomotive has been adapted to the internal combustion engine. A charter of incorporation has been granted to the promoters and the headquarters of the new company, which is known as the Internal Combustion Locomotive Co., are at Washington, Pa. T. H. McNary, of that city, is president.

The Furnace Equipment of a School Laboratory

Heat-Treating and Electric Furnaces in the Metallurgical Laboratory of the Carnegie Institute of Technology

By James H Knapp

A notable installation of heat-treating and electric furnaces has been made in the metallurgical laboratory of the Carnegie Institute of Technology, at Pittsburgh. The laboratory is 30 x 60 feet and the furnaces are arrayed along the sides of the building, as shown in Fig. 3. This leaves considerable space in the center for pouring molds and for making other equipments.

Iron and steel are heat-treated in the two furnaces shown in the foreground, Fig. 2. The rectangular furnace contains the tempering bath and is provided with a pocket into which the thermometer or pyrometer is inserted without interfering with the work in the bath. The metal circulates freely through this pocket, making it possible to obtain an accurate record of the bath temperature.

The work is suspended in the bath by wires or is placed in a wire basket. This tempering furnace is fired with natural gas in such a manner that the heat is uniformly distributed and penetrates the bath from all points. The other heat-treating furnace is of the circular pot type and can be used for a wide range of hardening work. Baths of lead, cyanide, or mixtures of salts can be used. This furnace also is heated with natural gas, which enters at the bottom and circulates around the pot, a vent being provided for the escape of the gases through the top. Both furnaces are equipped with hoods which carry off the gases as well as the fumes from the baths. Air is supplied to these furnaces at a pressure of about 6 ounces, from a blower which also furnishes air for the furnaces in the assay laboratory.

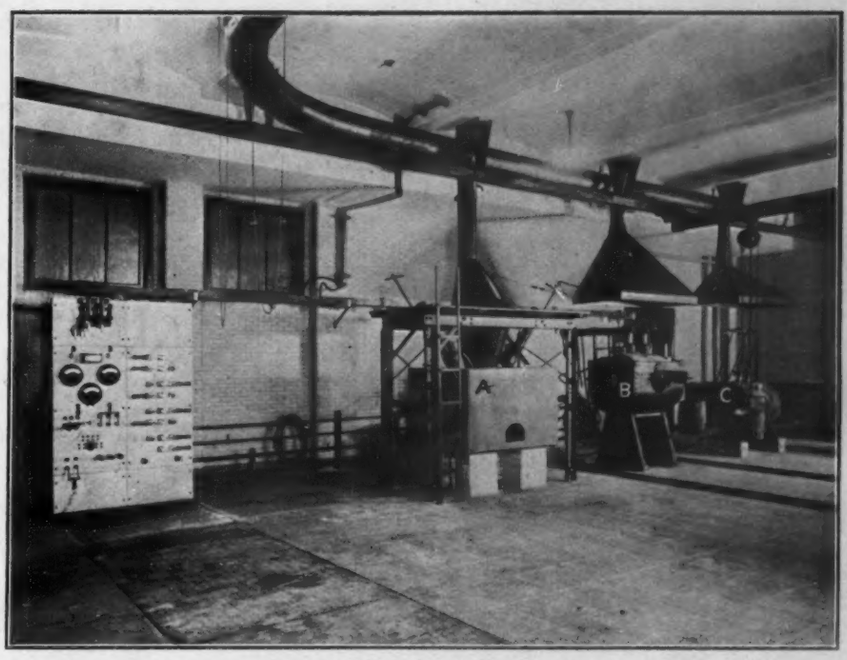


FIG. 2—THE INSTALLATION OF ELECTRIC FURNACES

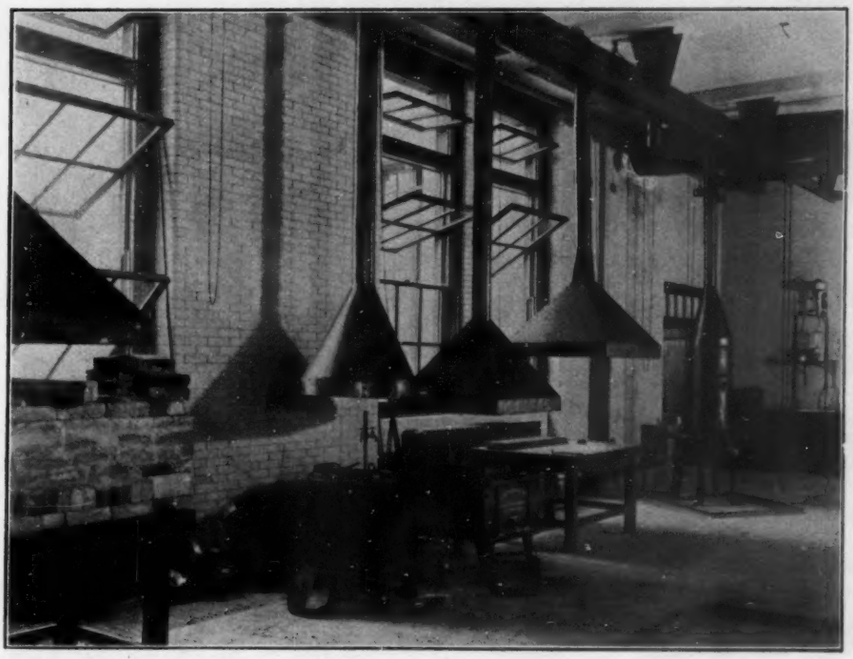


FIG. 1—HEAT-TREATING FURNACES IN THE METALLURGICAL LABORATORY

All the latest types of pyrometers are available, so that the student may check the temperatures of the different baths and may experiment and determine the results obtained, with different mixtures. Two tables, with concrete tops, are provided on which experimental furnaces may be built. One experimental furnace is shown on the table at the left of Fig. 1. Hoods are provided for these tables, and gas and air lines can be tapped at convenient points to supply the burners. At the end of this line of furnaces, Fig. 1, is a small cupola, 10 inches inside diameter, in which pig iron is melted for refining in the electric furnaces. The heat-treating furnaces were installed by Tate, Jones & Co., Inc., Pittsburgh.

The equipment of electric furnaces in this laboratory is probably the most complete experimental installation in this country. The furnaces are ar-

ranged along the wall opposite the heat-treating furnaces, and along the end wall of the laboratory. Among these are included a shaft furnace, combination arc and resistance furnace of the Heroult type, Wile and induction furnaces. Current for these furnaces is supplied by a motor generator set located in the power house. This set furnishes three phase alternating current at 480 volts and 60 cycles. The three phases are led to the board shown in Fig. 2, and can be tapped directly, if so desired. For the furnaces, however, one phase is led through a transformer which has four secondary coils that are connected to independent switches on the right side of the board.

By different arrangements of these switches, placing the coils in series or parallel or a combination of the two, in connection with a controller situated at the side of the switch board, three ranges of voltage can be obtained, as follows:

First ...	30	75 volts by 3-volt steps
Second	60	150 volts by 6-volt steps
Third ..	120	300 volts by 12-volt steps

This installation, taking only the one phase, has a capacity of 75 K. V. A. and the switchboard is equipped with three separate circuit-breaker coils on the primary circuit, one for 10 to 20 amperes, the second for 45 to 90 amperes, and the third for 150 to 300 amperes. Either one of these coils may be thrown into use by means of a switch which, when one coil is in, makes it impossible to throw in any of the other coils. The current from the board goes to copper bus bars which are supported around the walls of the room. These bus bars are made out of four pieces of copper, 4 x 3/16 inches, set so that there is an air space between each bar. Leads are furnished for connecting the different furnaces. These are arranged so that they can be easily taken off and moved from place to place along the bus bars.

The shaft furnace, *A*, Fig. 2, has a stationary shaft and hood, but the lower part or crucible, on brick pedestals, will be placed on a carriage which can be rolled out so that the design may be easily changed and the conditions inside of the crucible can be noted. In this furnace, the distance between the top of the crucible and the top of the shaft where material is charged, is 36 inches and it has a tapering bosh, similar to a blast furnace.

The diameter of the bosh at its maximum point is 24 inches and at its minimum point, 9 inches. The crucible will be built up in the steel shell which is 4 x 5 feet and 3 feet, 4 inches high. This shell will be arranged so that it can be rolled out from underneath the shaft.

The electrodes, which are 4 inches in diameter, are contained in adjustable, water-jacketed holders, which can be inserted at an angle, horizontally, or vertically. The electrodes are arranged so that they can be screwed together, end to end, thus using them up entirely, and they are held in position in a cradle so that there is no bending strain on them when they are in position.

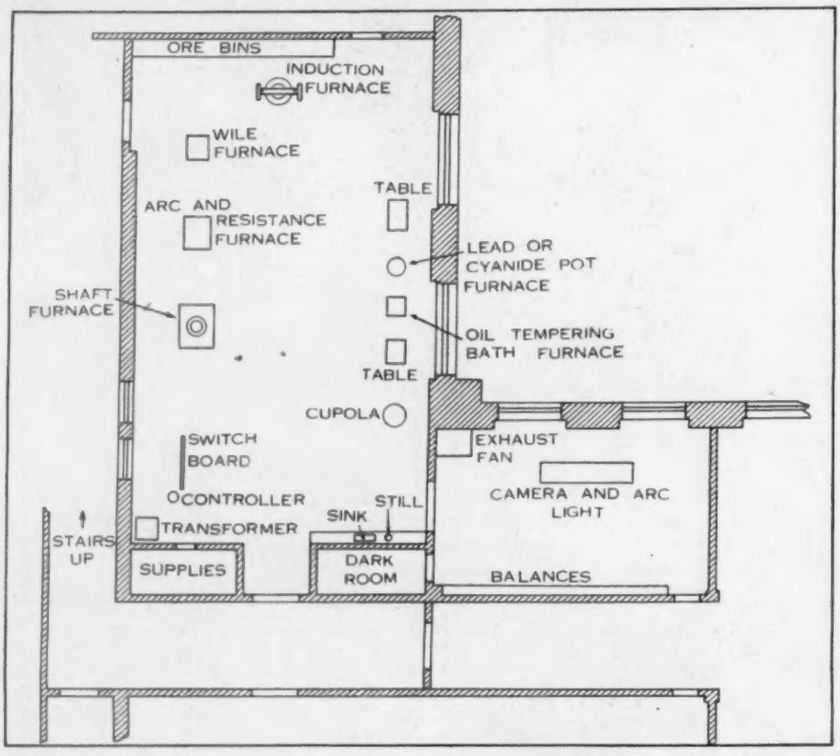


FIG. 3—PLAN OF THE METALLURGICAL LABORATORY OF THE CARNEGIE INSTITUTE OF TECHNOLOGY

Arc and Resistance Furnace

The combination arc and resistance furnace, *B*, Fig. 2, has a capacity of about 350 pounds of metal. It is arranged to tilt and it can be easily charged from the shaft furnace or the cupola with hot metal, this being quicker and easier than starting with a cold charge. The electrodes for this furnace are 4 inches in diameter, and are held in adjustable holders that are easily raised and lowered. Where the electrodes enter the furnace arch, they are surrounded by water jackets which keep them cool and prevent excessive oxidation at this point.

The Wile furnace, *C*, Fig. 2, is supported on rollers so that it can be moved out from under its hood and the top removed with the crane. This furnace was presented to the laboratory by its inventor, and is generally employed for melting brass. It is used, however, for iron and steel melting and refining. It has one electrode immersed in the bath. The induction furnace is of the Colby-Kjellin type, taking 75 pounds of metal and requiring 20 kilowatts to operate.

A 1,000-pound hand crane commands the laboratory. In front of each furnace is a framework of steel angles, laid on the floor, which encloses a space around the furnace that will be filled with sand to preserve the concrete floor.

The gas, air, water and drain pipes are attached to the walls and at convenient points in these lines valves are attached which have connections for hose fittings. By the use of several lengths of hose, water jackets, experimental burners, etc., may be connected with these lines. A large suction fan, in an adjoining room, exhausts the smoke, etc., from the hoods.

At the end of the room, Fig. 1, is a laboratory table fitted up with still and all necessary apparatus for making chemical analyses of iron and steel. In the room adjoining are assay and chemical balances, as well as complete equipment for taking and developing micro-photographs. In addition, a metallographic laboratory is provided for the preparation and examination of specimens.

Methods for Preventing Segregation in Ingots

Two Processes Which Have Proved Effective Were Described at the Leeds Meeting of the Iron and Steel Institute

By J Horton, Staff Correspondent

The Iron and Steel Institute held its autumnal meeting at Leeds, Eng., beginning Tuesday, Oct. 1, and continuing through the remainder of the week. The gathering was exceptionally successful, in the large attendance, the number and interest of the papers, and the elaborate program of visits and excursions. The meeting probably will be regarded as historic, on account of the papers dealing with the segregation of steel ingots, and the discussions which followed. An unexpected feature was the description given by Dr. J. E. Stead of a special process in operation at Cargo Fleet Works, Middlesborough, initiated by Benjamin Talbot, who for many years occupied important positions in American steel works. To some extent the conditions of the Buxton meeting, two years ago, were reproduced. Buxton is the sphere of influence of the Duke of Devonshire, at that time president of the institute, and this facilitated an unusual round of social visits, in addition to inspection of world-famous industrial concerns. Leeds, similarly, is an area in which Lord Airedale is powerfully influential, and his lordship's chairmanship of the local committee was of the greatest assistance in supplementing the business meetings with an admirable program of visits, excursions and entertainments. Twenty-six important works were thrown open for inspection, including Airedale Foundry (Kitson & Co.), in which Lord Airedale has a controlling interest. In addition, there were visits to Bolton Abbey and Fountains Abbey, by invitation, respectively, of the Duke of Devonshire and the Marquis of Ripon, with receptions at the City Art Gallery and the University, a garden party at Gledhow Hall, on the invitation of Lord and Lady Airedale, and a special theatrical performance. The members and their ladies, who took part in the various functions, totaled 670. Arthur Cooper, president, presided over the business meetings, which were held in the hall of the Philosophical and Literary Society. At the opening session the members were received by Lord Airedale, chairman of the local reception committee, and by the deputy lord mayor, who extended the visitors a hearty welcome. Arthur Cooper, president of the institute, acknowledging the addresses of welcome, observed that Leeds had won world-wide fame for its wrought iron, known as "Best Yorkshire."

John Henry Darby, who was awarded the Bessemer gold medal at the May meeting, but was prevented by illness from receiving the honor at that time, then was called upon to receive the medal. In handing the gift to him, the president remarked that this was the greatest honor the institute had to bestow, and he hoped he would continue to place his services and the result of his researches at the disposal of the organization.

Mr. Darby in acknowledging the gift mentioned the fact that in 1709, his grandfather was the first to use coke made from coal in the blast furnace. In 1789 another Darby relative applied similarly made iron to the building of the first iron bridge over the Severn river, which is still in use. Of the 40 presentations of the Bessemer medal, eight have been in connection with the basic process of steel manufacture.

Sir Robert A. Hadfield read in abstract his two papers, (1) "On a Method of Producing Sound Ingots," and (2) "On a new Method of Revealing Segregation in Ingots," which were published in THE IRON TRADE REVIEW, in the issues of Oct. 3 and 10. Dr. Hans Goldschmidt followed with his paper "On a New Method for the Improvement of the Soundness of Steel Ingots by the Aid of Thermit." The three papers were discussed together. Dr. J. E. Stead said that the papers were very interesting and valuable, although they appeared to be based upon two directly opposite principles. One sought to keep the top of the ingot hot, and the other, the bottom. Personally, he preferred to maintain the heat at the top, and he believed that to be the proper principle. At the same time, he added that Dr. Goldschmidt's results were very remarkable, but he thought that if the thermit cylinder were placed nearer to the top, still better results could be obtained. By introducing thermit in the inside of the ingot,

SIR ROBERT A. HADFIELD, WHOSE PAPERS ON THE DETECTION AND PREVENTION OF SEGREGATION IN STEEL INGOTS AROUSED GREAT INTEREST AT THE MEETING OF THE IRON AND STEEL INSTITUTE

he said that this was equivalent to the addition of silicon. It was essential, in such a case, to have aluminum in excess. Instead of having an excess of aluminum introduced by thermit, it would be better to have a much smaller quantity put there direct, and that was the method generally preferred for producing sound ingots. At the same time he did not desire to discourage Dr. Goldschmidt, and added that they were all very much indebted to him for his researches.

The speaker then called attention to what he considered a very remarkable photograph published in a paper presented by him before the Cleveland engineers. Instead of the steel being so segregated that the impurity was in the center this was really a pure-hearted steel. It was an ingot with a soft heart—no segregation—but practically pure iron in the middle.

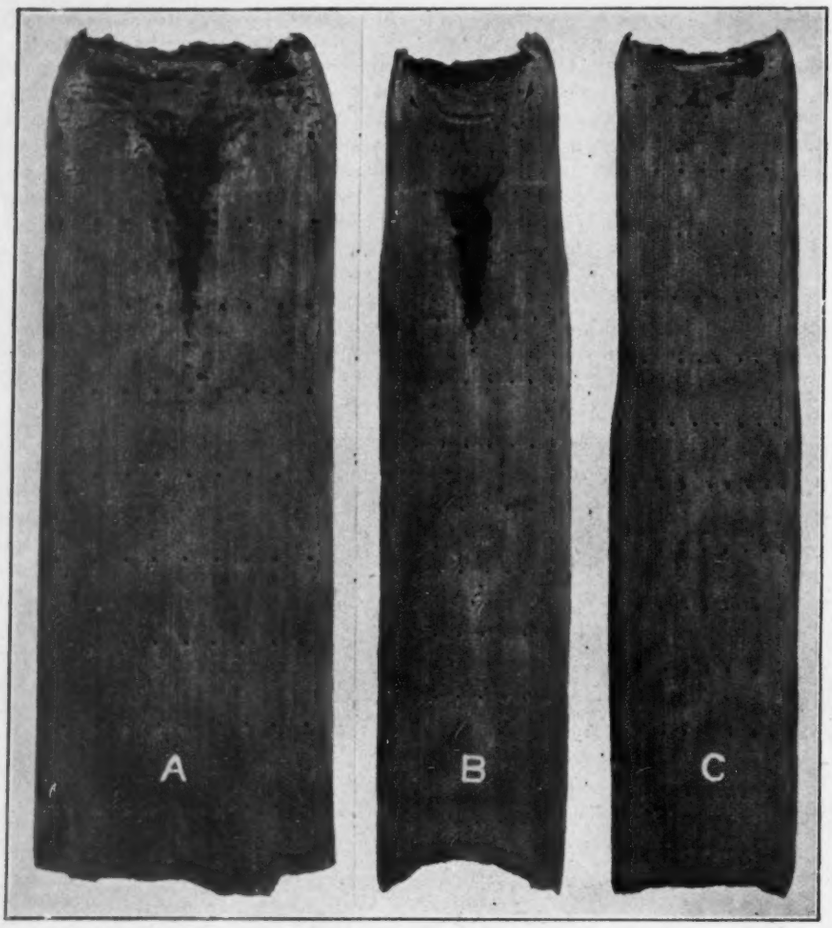


FIG. 1—COMPARISON OF STEEL INGOTS, UNTREATED AND TREATED BY THE TALBOT PROCESS. THIS STEEL WAS MADE WITH SILICON ADDITIONS

Dr. Stead then presented a written discussion of a process in operation at Cargo Fleet Works for producing sound ingots. The method was devised by Benjamin Talbot, and was adopted 18 months ago. He believed it was bound to lead to most important results in many branches of the heavy steel trade, particularly in the manufacture of rails.

Talbot Process for Eliminating Segregation

Dr. Stead's discussion follows:

"The ingot is first made absolutely sound by the use of aluminum or silicon, except as to the central pipe. The ingot is quickly stripped and is allowed to stand in the soaking pit for a short time. It is then—while its center is still liquid—sufficiently compressed by a few passes in the cogging mill to reduce its sectional area. The resulting semi-cogged ingot is free from cavity, and is absolutely sound. The practice at present is to return the semi-cogged ingot to the soaking pit in order to equalize the heat, but if this method should come into commercial use and if other developments in course of time are employed, it may not be necessary to do this. The rails rolled from the upper part of the ingots treated in this way stand the drop tests extremely well, and unsoundness is conspicuous by its absence.

"In the case of a rail with a nearly pure center, the ingot must have been nearly solid when passed through the rolls, hence the great purity of the central axis. Mr. Talbot partially rolls the ingot long before that stage, with the result that the carbon in the central column is only about 25 per cent less than the outer thick envelope, which of course solidifies in the normal way.

"When the ingot is taken from the soaking pit, the pipe will be well-developed and the central portion of the steel is free to flow. When placed on its side at the rolls, the steel will at once flow into the cavity before pressure is applied, while the gases travel along the frozen internal side of the ingot. As soon as sufficient pressure is applied these gases must be forced into the steel itself and remain there in solution, or escape into the air.

"Co-incidentally, during extension, the layer of steel just below the thick, solid envelope at the stage of solidification at which all steel is quite fragile, not being capable of extension, breaks up into a multitude of small fissures, and these are at once filled with the carbon, sulphur phosphorus and the rich residual liquid from the layer below consisting of loosely-packed, pure crystallites of iron and liquid."

Results of the Talbot Process

Fig. 1 shows 4-ton rail ingots treated to show the effect of the Talbot process for producing sound rails free from pipes and splits and having a harder working face with a softer center. The ingot, cut longitudinally through the center, showing the piped cavity at the top, is illustrated at *A*; *B* is the semi-cogged ingot cut longitudinally through the center showing the cavity not entirely filled at this stage. The ingot was cogged as in ordinary practice from a square area of 25 inches down to 18 inches. A semi-cogged ingot, cut longitudinally through the center and cogged while the center was still fluid, is shown at *C*. At this stage the cavity had entirely disappeared. This ingot was cogged from 25 x 25 inches to 18 x 18 inches. Silicon additions were made to this steel.

Steel with aluminum additions and cast into 3½-ton rail ingots, treated to show the effect of the Talbot process for producing sound rails, is shown in Fig. 2. An ingot cut longitudinally through the center showing the piped cavity at the top is illustrated at *A*. This ingot, semi-cogged as in ordinary practice, showing the cavity not filled up at this stage is shown at *B*. The ingot was cogged from 20 x 25 inches to 18 x

18 inches. A semi-cogged ingot, rolled while the center was still fluid, showing that the cavity had disappeared at this stage is shown at *C*. This ingot was cogged down from 20 x 25 inches to 18 x 18 inches.

Mr. Talbot said that he was convinced that the production of the sound ingot had to come. In England rails were not treated in the barbarous fashion prevailing in America, neither had they to face the climatic extremes. Consequently, the piped rail had not developed into the burning question naturally arising from the heavy loss of life in the United States. Apparently, American steel makers must choose one of two methods, either such as the one advocated by Sir Robert Hadfield, namely, the feeding of the pipe which formed, by means of a single head, or by some simple form of shrinkage thereby reducing the area of the ingot. At Cargo Fleet the latter method was adopted, and the results, so far, were very satisfactory. The bloom is perfectly sound, and there is no question of cavity either in the rail or the bloom so produced.

J. M. Gledhill said his experience in regard to segregation of steel had been more in connection with very large ingots for the production of forgings. The scheme initiated by Mr. Talbot was particularly interesting, because he believed that pressure was the only practical way of dealing with segregation, rather than filling up the holes. The speaker drew a sketch of an ingot weighing 128 tons, with a diameter of 72 inches and a length of 18 to 20 feet. It was subjected to a hydraulic pressure on the whole surface of 12,000 pounds. He knew that the segregation came in a certain part of the ingot, toward the top, while the remainder was homogeneous and sound. The center of the ingot was bored out, removing the segregated part, and the remaining sound portion of the ingot was over 100 tons in weight. At the top, the carbon was 0.09 and at the bottom 0.06 per cent, representing a remarkable degree of regularity for such a mass of steel.

A. S. Keith said that inasmuch as his firm is an extensive maker of girder rails, the papers were of great interest to him, because his concern, during the last 18 years, had produced nearly 200,000 tons of girder rails. He was well aware of the fact that it is not as essential to get as sound a rail for a street railway as for a steam road, and his experience was that basic Bessemer steel was producing as satisfactory a result as other steel. At present his company is producing for the Liverpool Corporation a rail weighing 130 pounds per yard. He was often told that the English-made rail was not equal to the foreign product, but as English rail-makers have to work to the same specifications as other mills he did not see how that could be so.

Harry Brearley thought the conditions described by Sir Robert Hadfield were probably more favorable than were to be met with in everyday practice. Experience had shown that it was much better to cast with the wide end of the ingot upwards than vice versa. That had a marked advantage from the piping point of view. Where charcoal was added, the wide-end-up method produced much better results. Sir Robert proposed to put the charcoal on the top of the metal, a practice carried on in the making of crucible steel for many years. His own experience did not support the statement that if there were no piping there would be no segregation.

Sir Robert Hadfield, replying to the discussion, said he did not agree that cooling should take place from the top, but from the bottom. Dr. Krupp once secured a patent for cooling the bottom artificially. That, theoretically, was the correct method. He had obtained an ingot weighing 1,513 pounds, 90 per cent of merchantable steel. He quite agreed that his own method was not new; it was rather a combination of old methods. It was very important that people should be able to travel with safety. He did not wish to reflect on any country, but in certain countries, very serious accidents were occurring and lives were being lost, and he, as a metallurgist, felt that was a slur on his art. It ought to be possible to produce a sound rail. Works should be able to produce sound steel, and it might be necessary to

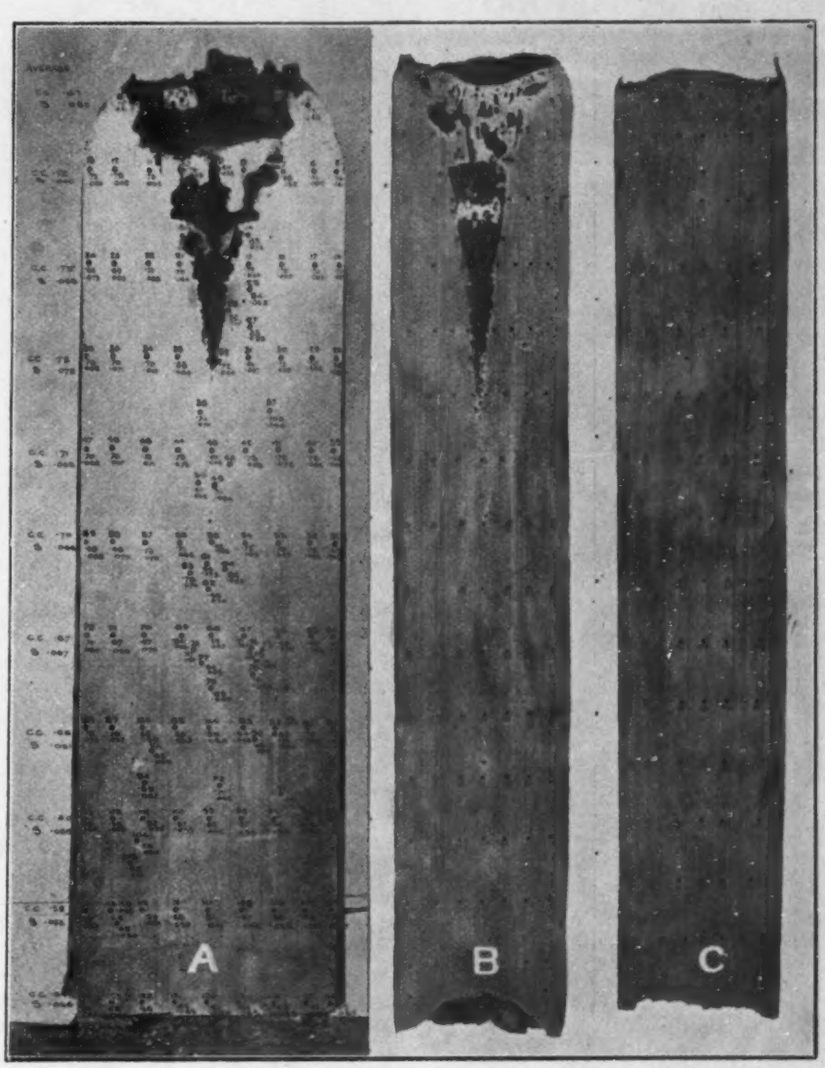


FIG. 2—STEEL WITH ALUMINUM ADDITIONS, SHOWING INGOTS UNTREATED AND TREATED BY THE TALBOT PROCESS

moderate the mad rush for output, to secure a safer product.

Sir Robert Hadfield said that a leading permanent way engineer had looked up the records, and found on all the passenger lines in England, in four years, there had been 36 breakages of rails, of which 13 occurred in tunnels. Of these, 19 took place in the bolt holes, and 10 were within 2 feet, 6 inches of the end of the rail, while seven were in the center, away from the practical effect of stresses due to the joining of the rail. The speaker asked if aluminum and silicon do not harm the steel, why not use them? There seems to be a dread of silicon. Twenty-five years ago it was found that 1 per cent of silicon could be used, and still very fair ductility could be obtained. Therefore, when they use 0.2 per cent, they need not fear any inability to get soundness. Sir Robert Hadfield added that the scheme outlined was a practical one, not carried out in a laboratory. If it had been, he would not have brought it before the institute. He said he was burning out thousands of tons of ingots by this process, and, as far as he knew, his plant had never had more than one or two ingots pulling or tapered in the upper portion owing to the flash. As to the question of cost, the whole expense of carrying out the process did not exceed one shilling per ton. The main reason for giving the paper was his hope that it might, to some extent, obviate the loss of life.

Dr. Goldschmidt in the course of a brief reply, said he used about one pound of thermit to the ton of liquid steel, and that represented only one centigrade of heat, which was practically negligible. As to the presence of slag, he had obtained figures representing 20,000 ingots rolled, and no slag had been found. He added that there was no danger whatever in the introduction of the cartridge into the ingot.

Open-Hearth Furnace Practice

Two papers were read in abstract, namely "On the manufacture of open-hearth steel with reference to improvement in yield," by F. W. Paull and "On Steel Yields," by Percy Longmuir and W. H. Robinson. Dr. Friedrich Springorum, of Dortmund, Germany, opened the discussion. He said that the author had made a statement that it was not possible to increase open-hearth output without increasing the surface of the bath. He quite agreed with this assertion, but it was possible to avoid that difficulty by separating the charge into two sections, and if the silica were poured off containing the greater part of the silicon and the greater percentage of the phosphorus, a slag containing silica and phosphoric acid would remain and the second part of the charge would be very quickly done. He said that in Germany they have 100-ton furnaces, and the production of such mediums is about 200 tons a day or 1,500 tons per week, with a yield of 104 per cent.

Coke Oven Gas Used

Adolph Greiner, of Seraing, Belgium, said that at the Cockerill works, no very large furnaces had been used for some time. However, for many years, gas, taken direct from by-product coke ovens, had been employed in place of producer gas. The first trials in Belgium of the use of coke oven gas for heating Siemens-Martins furnaces were made at the Cockerill works in 1909. The furnace used was of the Biederman & Harvey 4-ton type. The gas from the producer led directly to the furnace, the air only being heated to a temperature of about 900 degrees Cent. No alteration was made in the furnace, beyond cutting out communication with the producer, and supplying coke oven gas. The results were satisfactory, and a second 7-foot furnace was arranged for using coke oven gas. With producer gas 400 kilograms of coal were used per ton of steel, and a heat required 7 hours. With coke oven gas the heat was finished in less than 7 hours and the consumption of gas was 435 cubic meters per ton of steel. Sufficient proof was given of the possibility of using coke oven gas with heated air, resulting in a higher temperature and a greater relative yield from the furnace than was possible with producer gas.

Owing, however, to the supply of gas being largely required for other purposes, no further extension of the system took place until 1912, when a new battery of Solvay ovens was installed. The gas from this battery was led to the Siemens-Martins furnaces of the steel works. The furnaces were of the ordinary type, for a 10 to 15-ton charge and served by independent gas producers. For working with coke oven gas the furnaces were altered as follows. The flues leading the gas from the recuperators to the burners were cut out and were replaced by two pipes leading directly to the burners. The air and gas chambers were replaced by two air chambers having a capacity of 36 cubic meters. The actual volume of brick checker work in each chamber was 13.25 cubic meters. The two air burners were united into a single one covering entirely the two gas burners. The air reversing valve alone was retained. A small auxiliary valve was fitted on the platform for reversing the flow of the gas. The average daily production was 39 tons, the waste being 5.5 per cent with producer gas. The consumption of coal was 300 kilometers per ton. The average daily production was 49 tons on coke oven gas and the waste, 4 per cent. The higher temperature gave an increased output of 25.6 per cent. It permitted, moreover, the use of less pig iron in the charge. With producer gas the average proportion of pig iron was 31 per cent, and with coke oven gas only 21 per cent. It permitted, moreover, the furnace, owing to the use of a smaller percentage of pig iron, and the greater rapidity of the operation, which reduced the time during which the metal was under the action of oxidizing materials, while the metal being hotter, there was less loss by the formation of skulls in the casting ladles. The only disadvantage of the use of coke oven gas was the rapid destruction of certain parts of the furnace, particularly the crown, owing to the high temperature.

Elimination of Silicon

Prof. Louis said he did not agree with the statements on the elimination of silicon, and he did not believe that the chemical theory was quite sound, as it was not supported by present-day practice. It was suggested that the silicon was eliminated by reaction which reduced the metallic iron and the metallic iron was supposed to increase the yield. That might possibly take place in a laboratory, but it would not occur in an open-hearth furnace. If Mr. Paull's reactions were correct, we ought to get a yield of 120 per cent of steel, but in practice that was not the case. Many years ago he had some experience with the puddling of high silicon pig iron and the chemical reaction of the puddling furnace and of the open-hearth furnace were practically identical, and the result was a large increase in slag and a considerable decrease in the yield of puddled bars. In other words, the reaction, which, according to Mr. Paull, was to be expected, did not take place. He was convinced that the contention that it was an advantage to charge high silicon pig iron into an open-hearth furnace could not be maintained.

W. H. Hatfield said he greatly appreciated the actual figures which Mr.

Longmuir had put before the members, but there were many points he must take exception to in Mr. Paull's paper. He believed that, many years ago, Mr. Stead pointed out that, in the Bessemer process, it was possible to obtain the temperature at which the carbon was eliminated and the silicon remained. Mr. Paull seemed to think that the same condition might be expected in the Siemens furnace; but that was not so. In 1902 Prof. McWilliam presented a paper on the elimination of silicon in the acid open-hearth process, and the writer clearly showed that, with the high temperature employed for the finishing of the charge in the acid open-hearth system, it was possible to eliminate the silicon provided the slag was of the correct composition. It was shown that there was a rather delicate balancing of the silicon content of the slag. It was about 53 per cent silica. If they allowed their bath to become any richer than 53 per cent, the silicon went back into the charge from the silica. Mr. Paull seemed to point out that in a large furnace they got a lower yield than in a small one, which was contrary to his, Mr. Hatfield's, experience. He thought the general experience was that the larger the furnace the better the yield. He recalled that at Cargo Fleet Mr. Talbot got over 100 per cent yield out of his large furnace. Mr. Paull suggested that the larger the furnace the smaller the area, but he did not agree with that. With a large furnace a greater surface is actually exposed to the gases before the slag is at its greatest point. That seemed a strong argument against the expectation of a higher production from the smaller furnace. His idea was to melt in the open-hearth furnace as quickly as possible and to charge as quickly as possible.

Mr. Paull, in a brief reply, said he greatly appreciated Mr. Greiner's contribution, but he had often questioned the practical utility of increasing the quality of the gas beyond a certain point. While he agreed with Mr. Hatfield's axiom to "charge quickly and melt quickly" the difficulty was to apply that in practice.

Rolling Mill Practice in the United States

The secretary read, in abstract, the paper contributed by J. Puppe, on "Rolling Mill Practice in the United States." An interesting discussion followed which was listened to by a large audience.

A. Lamberton, in discussing Mr. Puppe's paper, referred to the comparison of German and American practice with cogging rolls. In Germany the reduction per pass through the rolls is scarcely ever more than 14 per cent in the area of the ingot or bloom, and in harder steel it is not carried beyond 11 or 12 per cent. In America, however, the average reduction per pass through the rolls is as high as 24 per cent. He wondered what bearing that practice had upon the structure and the quality of the material, especially as it applied to rails. The author had also dealt with the question of increasing production, and pointed out that a single rail mill was turning out 4,000 tons in 24 hours. Dr. Puppe very properly asked whether with so certain an output the amount of care was bestowed on the work which was desirable, in view of the great importance of obtaining the requisite high quality in the finished rails, and he pointed out that rail breakages were of much more frequent occurrence on American railways than in Europe. He agreed with the author that a good deal might be said on the subject of those enormous outputs and their relation to the rail breakages.

A most informing paragraph was the one showing the great severity of loads and speed on the United States railways, and the author pointed out that "the carrying capacity of the railways has increased five times, and the speeds have been nearly doubled, while the weight of rail has not been increased in proportion." Mr. Lamberton believed that it was not quite fair to criticise the quality of the material, and to say that that was the cause of accidents, while it was admitted that the loads had been doubled without a proportionate strengthening of the rail.

The speaker made further extracts from the paper, dealing with the improvement in the construction of the metal and the bearing of temperature and pressure throughout the whole of the rolling operations. The author had pointed out that "the shape itself and the distribution of the material have an important bearing on the cooling conditions." It had always struck him, continued the speaker, as being remarkable that in Great Britain they had persistently adhered to that section of permanent-way rail known as the double bulb, whereas almost universally on the continent and certainly in the States the section now known as the flat bottom bulb was preferred. Dr. Puppe had been making out his case largely, and he believed justly, upon two main points, the first of which was quality, and he inquired whether those large outputs rushed through the American works were not being obtained at the expense of quality. A second point, which was a very important one, was with regard to the drafts through the rolls at each of the passes. In rail rolling, they made it a point in British practice to treat the rail from the initial to the final passes, in a gradual way, making the temperature, as far as possible, coincide with those reductions, so that while the structure gradually increases in density the quality does not deteriorate.

Sir Robert Hadfield said he felt bound to follow somewhat in the line of Mr. Lamberton's very able remarks. He had received from America a copy of the new rail section, which had been adopted, and which was giving very much better results. He added that it was very evident that American railroads seemed to have arrived at the stage where they were expecting to get too much out of the rail without altering its form or increasing its weight.

W. W. Sly Increases Manufacturing Facilities

The W. W. Sly Mfg. Co., Cleveland, has completed a 40-foot, two-story addition to that section of its plant which is devoted to the manufacture of dust arresters and other sand blast equipment. A further extension is under way which will be two stories high and 100 feet long.

Recently, a contract was received from the Wheeling Mold & Foundry Co., Wheeling, for two steel sand blast rooms, together with dust arresters. These rooms are 12 x 15 feet and are so constructed that they can be converted into one large room, 15 x 24 feet, for the cleaning of large castings. Four steel sand blast rooms, with dust arresters, sand separators, etc., are being installed in the plant of the Scullin-Gallagher Iron & Steel Co., St. Louis. The installation of 42 exhaust tumbling mills and a number of dust arresters at the plant of Parlin & Orendorf, Canton, Ill., recently was completed.

The Rockwell Furnace Co., New York, will furnish a complete installation of oil-fired furnaces and ovens, for the new plant now being built for the Prestolite Co., Indianapolis. Overfired, accurate temperature furnaces will be used for heat treatment, and car-type ovens for baking asbestos discs. The equipment will have a capacity for heat-treating 1,200 tanks a day.

Increasing the Open-Hearth Furnace Output[1]

The Manufacture of Open-Hearth Steel With Particular Reference to an Improvement in the Yield

By F W Paul

In the early practice of open-hearth steel it was not unusual to obtain yields of 100 per cent as an average of 12 months' work. During the interval it has been the invariable practice when rebuilding the older small furnaces, or when installing new plant, to erect furnaces of considerably increased capacity, so that, whereas in 1880 they averaged about 10 tons, they are now 40, 80 and 100 tons.

The author admits that some of the important reasons which influenced him in his own practice to increase the weight of charges and the size of furnaces were the reasonable anticipation of increased yield, resulting from smaller percentage of waste ingot butt ends, less incidental scrap from furnaces and ladles by reason of fewer number of charges; and also the expectation of less waste due to accelerated melting, as the large chambers can maintain a greater intensity of combustion throughout the whole period of charging and melting.

The experience of working with large furnaces during the past 10 years affords reliable data as to the yield, which may be taken at 94 to 95 per cent.

Increasing the Open-Hearth Furnace Yield

It will be instructive to inquire into the causes of greater metallic waste in large furnaces, with a view to improvement, and with this object the author proposes to review in detail the operations of open-hearth steel manufacture, and to give particulars of a new method of conducting the pig iron, scrap, and ore process, which, in a few practical trials in 80-ton furnaces, has given increased yields of 5 to 7 per cent.

With a view to reliable and accurate weighings, the pig iron, steel scrap, and ingots were weighed in bulk in trucks on machines. The amount of ore used was 50 per cent greater than in ordinary practice, and this additional data, coupled with a balance-sheet of the amount of metallic iron charged into the furnace, and also the weight and composition of tapping slag, fully confirms the accuracy of the weighings, and the big increase in yield of ingots.

For the purpose of comparison, the following table shows approximately the respective bath areas of melting furnaces from 1880 to 1912:

Year	1880	1890	1900	1912
Weight of charge, tons	10	25	40	80
Length between blocks, feet	14	21	26	35
Width inside linings, feet	10	11	12	14
Bath area, sq. ft.	140	231	312	490
Area ratio per ton, square feet	14.0	9.2	7.8	6.1

Decreased Area Ratio

The area ratio per ton of charge has gradually decreased from 14 to 6.1 square feet. The practical limit of width of furnace between linings is reached at about 14 feet, because, if made wider, the cost of roof repairs would be greatly augmented; therefore, if it were desired to have an 80-ton furnace, with bath area ratio of 14 square feet, it would require to be 80 feet long. Between the range of 35 feet and 80 feet there is ample choice, but this point is referred to merely in reference to bath area, and its bearing on waste of metallic charge during period of melting and silicon elimination.

It is obvious that a large furnace with reduced bath area ratio, coupled with the necessity of having a good inclined slope in the bottom to drain the metal and slag completely from the extreme ends to the taphole, results in working with a deeper bath of metal as compared with the shallow bath of small furnaces, and the author suggests this is one of the indirect causes of less yield.

In order clearly to differentiate between the author's new method and the present-day ordinary practice, it is advisable to consider the following: Theoretical yield, charging, melting, elimination of silicon and boiling.

Theoretical Yield

The initial charge may be all pig iron or various proportions of steel scrap, such as the following:

	Y. Per cent.	Z. Per cent.
Pig iron	100	60
Steel scrap	030	40
Totals	100	100

AVERAGE COMPOSITION OF INITIAL CHARGE

	Y. Per cent.	Z. Per cent.
Iron	92.5	95.3
Carbon	3.5	2.1
Silicon	2.5	1.5
Manganese	1.5	1.1
Totals	100.0	100.0

THEORETICAL YIELD ON COMPLETE REDUCTION OF THE OXIDE OF IRON IN THE ORE

	Y. Per cent.	Z. Per cent.
Iron	92.5	95.3
Carbon	10.9	6.5
Silicon	3.3	1.9
Manganese	0.7	0.5
Yield	107.4	104.2
Yield ordinary	95.0	95.0
Difference	12.4	9.2

Notwithstanding the greater theoretical yield in working all pig iron charges, it is found in practice there is very little difference, because of the waste of metallic iron which takes place during silicon elimination, and, as the total time occupied in working such charges is much longer, it is more economical to work with a proportion of steel scrap.

Charging

Numerous variations in detail have been tried from time to time to minimize waste of oxidation during melting, such as charging the scrap first and covering it with the pig iron; charging all the pig iron, and when melted charging in the steel scrap; but in the ordinary pig and ore process, with say not less than 50 per cent of pig iron, the latter has always been found quite impracticable.

Melting

The heat of the flame is conveyed by direct contact to the upper layers of the charge, but in large furnaces of small bath area ratio the heat is, to a larger extent, conveyed by conduction to the lower layers of a deep bath. There is ample heat energy stored in the checker work of large furnaces to maintain such intensity of combustion during the melting period that the heat cannot be conveyed quickly enough by conduction, so that even while some of the lower layers of metal are solid, the upper layers are exposed to the keen flame temperature with intense local oxidation.

[1]Presented at the annual meeting of the Iron and Steel Institute.

The ready command of high-flame temperature may even cause volatilization of the iron before the whole mass of metal is melted. The author is of the opinion this is one of the causes of greater waste in large furnaces with large chambers and good gas.

Elimination of Silicon

When the charge is thoroughly melted, and not too hot, the reaction of

$$Fe_3O_4 + 2Si = 2SiO_2 + 3Fe$$

takes place quietly.

This reaction, however, is at times seriously retarded when the bath of metal is too hot, more particularly when using very gray pig iron containing a high percentage of silicon, or with charges containing a small percentage of steel scrap.

In large, deep furnaces with big chambers, the temperature of the metal may be unequally distributed, that is, the upper layers too hot. Under these conditions, instead of the reaction taking place quietly, there ensues antagonistic action between the metal and oxide in the slag, causing them to froth up, and at times to overflow the sill plates. It is at such times that the banks of the furnace are fluxed away, and this is the principal cause of delays for repairs.

Again, this forced reaction of silicon elimination, or, as it is practically termed, *forcing on the boil*, results in a subsequent sluggish boil, that is, not boiling freely from the bottom and the steel is not of thorough uniform composition.

In bad cases this is evidenced by the scintillations or sparks from the highly carbonized metal, which at first runs out of the furnace when it is tapped.

This reaction is accompanied by emission of dense volumes of brown smoke, which are carried away with the waste gases to the chimney, and are identical in composition with the fumes of the after-blow in Bessemer practice.

These oxide of iron fumes in their passage through the chambers become partly deposited in the checker work as fine dust, and are the means of causing the objectionable fluxing action and slag deposition, more particularly in chambers of large capacity and high temperature.

Boiling

The ebullition at the boiling stage is caused by the escape of carbon monoxide, resulting from the reaction

$$Fe_3O_4 + 4C = 4CO + 3Fe$$

Unlike the silicon reaction, the affinity of oxygen and carbon is augmented with an increase of temperature, therefore the nearer the furnace is worked to its practical maximum intensity consistent with utilizing the heat with regular feeding of iron ore, the more the boiling is accelerated and the period shortened.

Instead of the pig iron being charged in one continuous operation, only a small fraction is taken, about 5 to 10 per cent, and brought to a molten state, and thereafter the subsequent additions of pig iron are charged into this initial bath of molten metal, which is maintained in liquid form substantially during the entire period of charging.

After the pig iron is all charged, and the silicon sufficiently removed to permit of superheating the metal without loss, or after the metal has been brought to the boil, the steel scrap is charged in such increments and at such rate as is commensurate with the heating capabilities of the furnace maintaining the bath in liquid form.

As regards the use of molten pig iron in basic or acid furnaces, this method, with additions of iron oxide, permits of the elimination of silicon at low temperature, and so avoids the fluxing of the banks, and thus affords, in the basic process especially, means of working with low sulphur pig iron, and greater latitude as regards contents of silicon.

Melting

The heat of the flame is in direct contact with each successive addition of pig iron and scrap floating on the surface, consequently the gas and air can be maintained at their maximum, and the temperature of the furnace and metal regulated by the rate at which cold material is fed into the furnace.

The pig iron and scrap floating in a molten bath of metal with a protective coating of slag are protected from the oxidizing atmosphere of the furnace. Less waste ensues, and the yield is increased.

Another important feature of this method is the practical means of arranging the most suitable conditions for removal of silicon, and obtaining its equivalent reduction of iron from iron ore without diminishing the number of charges per week.

Snelus demonstrated in 1871 that at the initial low temperature at the commencement of the Bessemer blow, silicon was oxidized while leaving the carbon intact.

Bell also demonstrated in 1871 by his washing process, that the intimate contact of molten pig iron and molten oxide of iron resulted in removal of silicon while the carbon was not affected.

Dr. Stead has confirmed by experiments that, under suitable conditions, the reaction of oxide of iron and silicon results in an increase of yield. While the author is in agreement with these views, he desires to point out that, in addition to avoiding the waste during melting to which Dr. Stead refers, it is also necessary to prevent the great waste which takes place during silicon elimination.

As a result of practical trials of the proposed new method, it has been conclusively proved that the actual theoretical yield can be more nearly approached than has ever hitherto been accomplished by the ordinary process.

Bessemer Process Reactions

In the Bessemer process, when a very siliceous pig iron is used, the reaction between the oxygen and silicon results in the metal becoming so hot that the carbon can be entirely eliminated, while there still remains as much as 1 per cent of silicon unoxidized in the steel, which can only be eliminated by an afterblow, with great waste of iron and emission of dense volumes of brown smoke. The usual practice when it is recognized the metal is too hot is to add cold steel scrap.

In the puddling process it is also recognized that siliceous iron causes trouble, frequently resulting in the metal cutting through the bottom plates of the furnace.

In the Talbot process, molten pig iron is charged into an open-hearth furnace, containing 50 tons, more or less, of steel. It is evident the mass of steel is necessarily at a high temperature, so that with suitable iron containing small percentage of silicon, there immediately ensues a vigorous reaction between the oxide of iron and the carbon. When, however, gray siliceous iron is used, there ensues a violent and explosive action, accompanied with the emission of dense, brown fumes. The probable explanation is that, as already pointed out, it is impossible to superheat gray pig iron without oxidizing the iron. It is interesting to note that Mr. Talbot obtained a patent in 1909 for preparatory treating of gray iron in a Bessemer vessel, for its subsequent use by the Talbot process. In the patent specifications he says: "One of the advantages of this treatment is, that all, or practically all, the carbon remaining, of which about 1 per cent was originally in the graphitic form, is converted into combined carbon, and the foaming, or

even the explosions, due to the graphite form of carbon in the subsequent treatment is avoided."

The violent reaction in the Talbot process would appear to be identical with what takes place in ordinary open-hearth practice when siliceous pig iron of the charge is allowed to get too hot before the silicon is eliminated.

Having pointed out the practical disadvantages attending the elimination of silicon at high temperature, it will be now pertinent to explain in detail the conditions of its removal in the proposed new method.

During the additions of pig iron, oxide of iron is added in sufficient quantity to eliminate the silicon. By this means the melting stage and the silicon elimination stage are merged into one.

The elimination of silicon is carried on concurrently with melting, that is, for a period of six hours or more with the metal at low temperature, therefore the scouring action on the banks is considerably diminished.

This new method of bringing each successive addition of pig iron, which is melted while floating in contact with the oxide of iron in the slag, is a near approach on a practical scale to the ideal of bringing in close contact each molecule of silicon and oxide of iron, so that by the time the pig iron is all charged, the silicon has been more or less eliminated under the most favorable conditions, that is, intimate contact of the pig iron and the oxide of iron in the slag, the temperature of both being under such perfect control that the reaction takes place without any emission of brown smoke.

In the pig iron and ore process, in which the initial charge contains not less than 50 per cent of pig iron, it has hitherto been impracticable to superheat the pig iron in the furnace preparatory to subsequently feeding the steel scrap. The author ventures to assert that it is quite impracticable to do so with siliceous gray iron in an open-hearth furnace to such an extent as to enable steel scrap to be immersed into it without very serious delay and waste.

The author suggests the limit of superheating siliceous iron is reached when the iron begins to be volatilized, or at least carried off in the form of brown fumes, so that any prolongation of maintaining a higher temperature in the constructional brickwork of the body of the furnace would not result in the metal taking up much more heat, but merely result in the slag becoming so enriched with oxide of iron that the banks of the furnace would be cut away.

In the proposed new method, the ideal object aimed at is that the silicon should be more or less completely eliminated by the time the pig iron is all charged, or previous to charging the steel scrap. Such metal, that is, containing little silicon, can be superheated until the temperature suffices for the reaction of the oxide of iron from the ore and the carbon in the metal, and the charge would come to the boil, provided the slag contained sufficient oxide of iron. On the other hand, if the slag were allowed to thicken up towards the end of the silicon elimination stage, the bath of metal could be superheated to a very considerable extent.

The following are the important features of these proposals in method of working, which have been definitely confirmed by actual practice in 70-ton furnaces:

1.—A very decided increase of yield.

2.—The practicability of superheating the desiliconized metal to such an extent as to permit of cold steel scrap being charged into the bath of metal without partly setting it, and without delay or waste.

3.—That charges of all pig iron can be worked with considerable increase in yields compared with charges of pig iron and scrap, and with approximately the same number of charges per week.

4.—The brickwork of the furnace is not subjected to such extreme fluctuations of temperature. The unobstructed passage of the flame is not so destructive to linings and roof as when the flame is deflected by striking against piled-up material in the furnace.

5.—During the melting stage and silicon removal at low temperature, the level of the metal in the furnace is continually altering, therefore the scouring or fluxing action on the thin top part of the banks of the furnace, as in ordinary practice, is avoided, consequently, there is less loss of time for repairs and less risk of breakouts, which are of greater importance in large furnaces.

The author has on a previous occasion referred to an investigation which showed that metallic iron was wasted to the extent of 25 cwts. per hour by passing up the chimney as brown oxide of iron fumes during the silicon removal stage. As this takes place for two hours during every charge, and say 400 charges are worked per year, there would be an equivalent of 1,500 tons of oxide of iron passing through the chambers per year. Part of this settles out, and is deposited in the gas and air chambers. It can readily be conceived that the ability to prevent the oxide of iron fumes being formed will probably result in the life of the chambers being greatly increased.

DECREASED EARNINGS

Shown by American Ship Building Co. for Fiscal Year.

The annual report of the American Ship Building Co. was presented to stockholders Oct. 9, at their meeting in Jersey City, showing the earnings for the year ended June 30, last, were smaller than for the year previous. It earned about 1/3 of 1 per cent on its common stock, compared with 1.1 per cent the year before. The outlook, however, is considered favorable.

President J. C. Wallace told stockholders the marine business continued dull during the past fiscal year up to the close of navigation in 1911. Opening of navigation this year was encouraging and at the end of the company's fiscal year there was a fair revival in business. He said:

"All of the properties of the company have been kept fully up to the standard of condition. The plant at Port Arthur, Can., is now in full operation, with contracts for steamers that will keep it busy for the next six to eight months, and has additional negotiations pending. It is also well employed in dry dock and repair work.

"At Lorain the enlarged machine shop is about complete and will add to the business of that plant.

"During its fiscal year the company has built and completed 12 vessels and has now under construction 19.

"The general propect for the business of the company is more favorable than for years.

"The favorable crop prospect will add to the freight carrying demand and capacity."

The following financial statement was made:

	June 30. 1912.	Decrease.
Net earnings	$802,528	$152,334
Maintenance, etc.	221,829	95,815
Bal.	580,619	56,519
Pfd. divs.	553,000	.....
Balance	27,699	56,519
Com. divs.	.....	608,000
Surplus	26,699	551,481*
Prev. surplus	6,480,193	523,782
Total surplus	6,507,892	27,699*

*Increase.

The output of the Nova Scotia Steel & Coal Co. for September in tons was as follows: Coal, 67,889; pig iron, 7,490; steel ingots, 6,722; iron ore mined, 57,913.

NICE, EASY JOBS

Are Sought, Said Thos. D. West to the Pittsburgh Foundrymen.

At the meeting of the Pittsburgh Foundrymen's Association, Oct. 14, Thomas D. West, chairman of the West Steel Casting Co., of Cleveland, read a paper on "The Menace of Scarcity in Common Labor".

"Nearly all foundries," said Mr. West, "and in fact all industries requiring unskilled labor that cannot supply nice, easy jobs, were, during the past summer, and are now, experiencing much difficulty in obtaining and holding common labor. The scarcity has caused many hardships and excessive costs to manufacturers, which, for the time at least, could not by many be charged to the consumers. Production has been retarded, and some important and proposed enterprises have been abandoned."

Mr. West pointed out that the scarcity of common laborers would help to shorten periods of business prosperity. He said that the coming winter would naturally see a greater supply of laborers for indoor work, but if the present prosperity continues until next spring, foundries, mills and furnaces will again be hunting for men and it is a question whether the increased wages will fill the demand. The great trouble is that a search for something nice and easy is the principal aim of many workingmen. Mr. West said that in operating his foundry he undertook every plan possible for getting laborers and keeping them employed, but fully 50 per cent of the men solicited rejected foundry work flatly because it was not clean and easy. The question of wages was seemingly of secondary consideration. "There are," said Mr. West, "so many nice, easy vocations for the employment of unskilled men that when prosperity prevails, the easy jobs draw and hold men who refuse to go into foundries, furnaces and mills. When unskilled men fail to get nice, easy jobs, they often resort to loitering or crime. Streets, shady nooks and saloons were filled with enough loafers the past summer to have greatly relieved the scarcity of labor."

Mr. West next discussed the causes of the rapid decrease in laborers and declared that the nation is now doing about all that is possible to educate the young away from labor. He condemned the play yards and gymnasiums, which, he said, educate for a continuation of amusements rather than for hard work. He also severely criticised various measures for the promotion of health, which, he said, are being carried to a ridiculous extent. "Laborers," he stated, "can be found carrying their own sanitary drinking cups and wearing gloves when working, lest they might soil their hands. There need be little surprise to soon find objection to workmen sitting down without having their own pads and we may look for insistence upon breathing only filtered air." He deplored the tendency of many men having ability to be nothing more than common laborers, to avoid and be ashamed of work that begrimes and callouses. "There is," he said, "but one course left for all employing agencies. There must be a high wage rate for those willing to do the hard, dirty work of life, while those who want the nice and clean, easy work, must accept the low wages if civilization is to escape panics, privations and revolutions. It would be remarkable if brawn should ever command more wages than brains, but anyone who will make a deep study of the factors involved in the great scarcity of common labor will be compelled to concede that such is the outlook."

Mr. West spoke of the necessity of special training to create efficient laborers. He said that the common laborer must be respected and the present blind passion for ease and pleasure and discarding of manual labor must be replaced by the demand, "Back to Work."

Mr. West suggests the following methods for relieving the present situation:

First. Encourage foreigners who are in this country to inform their relatives and friends in Europe of this country's demand for laborers and the excellent wages being paid.

Second. Have agents search the nooks and corners of villages, towns and cities for unskilled men having no certain vocation and men who are down and out and might be induced to accept indoor work through the winter.

Third. Hunt out municipal laborers and hold them, if possible, so that they will not return to work for the city in spring. This would help to bring municipal officers and politicians in general to an appreciation of what a scarcity of labor means.

Fourth. In engaging new laborers, avoid taking those who will be likely to leave in the spring, when they will be most needed.

"This fall and winter," said Mr. West, "will afford opportunity for efforts to obtain and train men for making laborers that should not be neglected. If the great majority ignore this opportunity, our present prosperity will be curtailed and both capital and labor will suffer."

HEAVY INCREASE

In Steel Corporation Books.—Orders Now Near Highest Mark.

The unexpectedly large increase of 388,132 tons over the month of August is shown by the announcement of its unfilled tonnage awaiting manufacture for the month ended Sept. 30, which was issued by the United States Steel Corporation Oct. 10. The booked orders on Sept. 30 stand at 6,551,507 tons, compared with 6,163,375 tons on Aug. 31.

The tonnage now on hand exceeds that of any period since the close of the second quarter of the active year of 1907, when 7,603,878 tons were reported. On only seven occasions when announcements were made since its organization, has the present tonnage been surpassed. In all these cases, the figures included the tonnages passing between the subsidiary companies, which have been eliminated in the reports of recent years, so that it may be said that the orders from the general trade now awaiting rolling are nearly the highest of any time in the history of the leading producer.

Since the plan of making monthly statements of unfilled tonnage has been followed by the Corporation, the statements of business on hand, the tonnage and percentages of increase or decline from the previous month, have been as follows:

Date.	Total.	Change, tonnage.	Change, per cent.
Sept. 30, 1912....	6,551,507	388,132+	6.29+
Aug. 31, 1912....	6,163,375	206.296+	3.46+
July 31, 1912....	5 957,079	149.773+	2.58+
June 30, 1912....	5,807,346	56 363+	0.98+
May 31, 1912....	5,750,983	86.983+	1.52+
Apr. 30, 1912....	5 664,885	360,044+	6.97+
Mar. 31, 1912....	5.304,841	149,359—	2.79—
Feb. 29, 1912....	5 454,200	74,479+	1.38+
Jan. 31, 1912....	5.379,721	294,960+	5.71+
Dec. 31, 1911....	5,084,761	942 806+	23.24+
Nov. 30, 1911....	4,141,955	447.627+	12.06+
Oct. 31, 1911....	3,694,328	83 011+	2.25+
Sept. 30, 1911....	3,611.317	84.668—	2.34—
Aug. 31, 1911....	3 695,985	111,900+	3.33+
July 31, 1911....	3.584,085	223.027+	7.16+
June 30, 1911....	3 361,058	247,871+	7.96+
May 31, 1911....	3.113,187	105,617—	3.28—
Apr. 30, 1911....	3,218.704	228 597—	6.63—
Mar. 31, 1911....	3,447,301	46 758+	1.37+
Feb. 28, 1911....	3,400,543	289 624+	9.31+
Jan. 31, 1911....	3.110.919	436 162+	16.30+
Dec. 31, 1910....	2 674,757	85,656—	3.09—
Nov. 30, 1910....	2 760,413	111.536—	3.88—
Oct. 31, 1910....	2 871,949	286,157—	9.12—
Sept. 30, 1910....	3.159.106	379,088—	10.74—
Aug. 31, 1910....	3,537.128	431 803—	10.92—
July 31, 1910....	3,913,931	286,863—	6.72—
June 30, 1910....	4,257,794	.....	.....

THE IRON TRADE REVIEW

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Soft, Easy Jobs and Hard Ones

The scarcity of employes in furnaces, mills and foundries has recently become so pronounced that much consideration is being given to it in the hope of improving conditions. Thomas D. West, in his paper, read at the meeting of the Pittsburgh Foundrymen's Association last Monday evening, dwelt particularly upon the tendency nowadays of many men to seek nice, easy jobs. He said that fully 50 per cent of the men whom he asked to work in his foundry flatly refused to do so, because the work was not clean and easy. It is undoubtedly true that to a greater extent than in past years, automobile plants and other manufacturing concerns offer jobs even to laborers that are more attractive than those of laborers in foundries and other iron and steel plants. It may be that there is more of a tendency toward the easy life, or at least toward work free from grime, than there was in other years of prosperity. If this is true, it is because the scarcity of labor in the United States at the present time is greater than for many years on account of unusual conditions prevailing in foreign lands.

Naturally, a common laborer desires to rise to better conditions, and his son is likely to be able to do it. In this great country of ours, men are the common laborers of today, whose sons become the skilled mechanics of tomorrow. The evolution has often been shown in the fact that the members of a nationality, who, a few years ago, were digging ditches and doing other kinds of very hard work, pass on to higher grades of work, while the harder physical work is done by representatives of other nations. The Irish, for example, often succeed the English as laborers and in turn Hungarians take their places in the lowest kind of labor. Perhaps, later, Hungarians are replaced by immigrants from other countries.

These changes mark the steady progress of men who are improving their conditions. They are not to be deplored. We do not agree with Mr. West that the establishing of play grounds and gymnasiums ought to be stopped. Giving the child instructions how to play intelligently, or showing the young man how to become more muscular, is not training young people to avoid hard work. It is making them more healthy and bringing sunshine into their lives. Nor is there anything reprehensible in teaching workingmen how to avoid contracting tuberculosis and other terrible diseases. We are glad to hear from Mr. West that even laborers can be found carrying their own sanitary drinking cups. The advocacy of measures to insure the health and reasonable comfort of workingmen is not to encourage the seeking of an easy life.

We thoroughly agree with Mr. West, however, that there are a large number of men who are seeking soft jobs because they are not willing to do any work where their hands may become soiled and will loaf or do worse things, if they cannot get the kind of work they like. These men should be forced to work, either in shops or on the chain gang. Loafers about parks and other resorts should be compelled to give reason for their idleness. If they are unable to do so, they should be arrested as loiterers and put to work by the state. There is also, we believe, danger of well-meaning philanthropists carrying their efforts to such an extent that many people will get the idea that they can live without working. Misguided philanthropy weakens its subjects and is always to be avoided.

Mr. West makes some excellent practical suggestions of methods for relieving labor shortage. Much could undoubtedly be done by raising wages and in other ways encouraging men to work as common laborers, but it is not probable that present conditions will be entirely relieved until decided changes come in foreign countries.

The Connellsville Coke Situation

Seldom has there been such a reversal in the character of the Connellsville coke market as has occurred in the past three months. Three months ago the Connellsville coke operators were fighting to get a price of $2.50 for furnace coke. They had been demanding that price for several weeks, on contracts for second half, and furnaces, holding that the price looked artificial and lacked spontaneity, were declining to pay it, and refusing not quietly, but strenuously. Many operators had adopted the policy of blowing out all ovens not required to meet their contract obligations, on the principle that they would make no coke to offer in the prompt market. In describing the market our reports frequently used the word "deadlock".

Finally the deadlock was broken, and there were sales at $2.25, perhaps at less. Almost immediately the market began to stiffen from that basis. Prices at first rose slowly, and then rapidly.

Today the position in the Connellsville region is

that the operators are running all the ovens they can man, and wishing they could secure additional labor. According to the *Courier*, there are at least 5,000 idle ovens in the region which are adequately supplied with coal, besides many more whose coal has been worked out and which could produce only from shipped coal. The ovens are idle not because the owners so elect, as they did in certain cases three months ago, but because labor is not available.

These 5,000 ovens, adequately manned, could easily make 250,000 tons of coke a month, more than enough to supply all the idle merchant furnaces in the central west, whose owners have the least thought of blowing them in, yet the situation is that a very few furnace men who are anxious to blow in their furnaces are hard put to find any coke, even at a fancy price.

A condition of precisely this description has never before obtained in the Connellsville region. There has often been a shortage of labor, but it has either been when there was a rapid increase in operations, and time had to be allowed for the men to drift back, or when the wages were not satisfactory, and an increase in wages then solved the problem. The current wage scale is by far the highest ever paid in the region.

It is to Europe that one must look for the explanation of the condition. In the first place, Europe is prosperous, and has been so for some time. The labor of southern Europe is much less disposed to come to this country than has been the case at any time in the past. Relatively recently Italian war drew many men from this country, and now we have the trouble in the Balkans, which has already started to draw men away. How far this movement will extend it is impossible to surmise at this time; it can only be regarded as certain that the rest of the movement will not be into this country. Some relief in the Connellsville region may be experienced when bad weather puts a stop to the large amount of highway improvement, which is in progress in Western Pennsylvania, and that is about all that can be looked for.

No doubt the present situation will greatly increase interest in more modern methods of coke production, which dispense with a portion of the labor required in the old-fashioned beehive oven, and particularly in the by-product processes.

The Convalescence of Earnings

History in the steel trade has demonstrated that the most natural and permanent improvement in the market has come from the ground up. Where prices have started at a low point and have risen by gradual stages under the impetus of expanding demand, the result has been a healthful state of continued prosperity, extending over several years. The high prices of 1902 came after a steady upward climb of the market dating back to the excessively low values of shortly after the midyear of 1900. In the 1906-7 movement, the remembrance and lessons of which are more vividly retained in the minds of the present-day steel makers, the prosperous conditions developed from a consistent advance of prices starting at an extraordinarily low stage in 1904. As contrasted to this natural rise of the market by a slow but sure process accompanied by a strong and steady growth of demand, may be viewed the temporary flurry of 1910. Many steel makers deceived themselves into believing that the revival then represented a final turn for the better. Retrospection, however, more clearly shows the 1910 movement to have been premature, if not in some degree artificial, and to have been stimulated chiefly by sellers. It started on a comparatively high price level and quotations at no time showed conspicuous buoyancy. Values fell rather than grew with the market and there was an apparent lack of a spreading support from consuming buyers.

Applying the story of the past to the present market, the signs multiply that the ground work has been well and securely laid for a period of genuine prosperity in the steel trade. Whether or not the open market declaration of the Republic Iron & Steel Co. in May, 1911, was directly responsible for the remarkably low prices that developed in October and November is immaterial. The fact stands out that conditions did shape themselves in accordance with the famous injunction of Andrew Carnegie, "to raise a market, get under it". As the market's ailment was acute, a severe remedy was necessitated.

The effect of the near-panic prices that ruled until lately has received many practical demonstrations recently in the lean profits or in the absence of profits in the financial statements of steel companies. The first half of the present year has seen this condition at its worst. Throughout that time, the steel makers have been working on contracts taken at the low market of the closing months of 1911, which have kept abnormally depressed the average price on mill books. These contracts, symbolizing the rock bottom point of the market's descent, have undoubtedly played an important part in the present improved conditions, which in effect have been pyramided upon them. The extremely low prices, had they been greatly prolonged, however, would have failed as corrective agents, would have been good for neither buyer nor seller and certainly would not have been conducive to the benefit of the general public.

The very favorable showing of earnings for the third quarter of this year of the Lackawanna Steel Co., a typical producer, which has just been announced, accordingly is both significant and encouraging. The healthy balance from its third quarter operations, compared with the deficit of this company for the preceding six months, illustrates the change from values of a period of depression to those affording fair profits. As a typical instance of what is now going on with steel makers in general, it foreshadows the approach of a period of reasonable earnings.

The fact that the steel industry is now emerging from a period of excessively low prices to one of fair values comparable with the demand, marks further progress towards the goal of genuine prosperity.

Men of different parties are always ready to blame their opponents when a weak mind, affected by bitter attacks during the heat of a campaign, attempts to commit murder. Now, when a great leader has been wounded, it is time for all men, including the supporters of that leader, to inquire whether they are not themselves responsible for some of the bitterness which prevails in the present campaign. No party is free from blame. May we not hope that the last three weeks of the campaign will be characterized by a more reasonable spirit?

MEN OF THE IRON TRADE

Victor C. Lassen has severed his connection with the Vanadium Metals Co., and the Victor Metals Co., both of Pittsburgh.

Henry Upholt, Saginaw, Mich., has taken up his duties as superintendent of the plant of the American Brass Novelty Co., Grand Haven, Mich.

E. S. Jenison, formerly with the Henion & Hubbell Co., Chicago, has been appointed manager of the pump department of the Canadian Fairbanks-Morse Co., Ltd.

C. A. Sargeant, of Domhoff & Joyce Co., Cincinnati, dealer in pig iron and coke, will go to Milford, Pa., on Nov. 1, for a month's vacation in the mountains.

President James A. Farrell, of the United States Steel Corporation, left New York last week for Chicago, to spend another of his periodical trips of inspection among the plants of the Steel Corporation in that district.

Stedman Bent, who resigned as purchasing agent of the Pennsylvania Steel Co., and its allied companies on Oct. 1, has opened an office at 730 Real Estate Trust building, Philadelphia, as a manufacturer's agent.

A. F. McKinstry, superintendent of the Hamilton, Ont., plant of the International Harvester Co., has been appointed manager of the eastern works of the company. He is succeeded as superintendent by H. H. Biggart, formerly assistant superintendent.

H. H. Pleasance, Detroit, Mich., has been elected secretary and general manager of the Universal Welding Co., St. Anne, Ill. Mr. Pleasance has represented the Cambria Steel Co. in Michigan for several years. His resignation takes effect Oct. 19.

H. B. Placke is in charge of the offices of the International Steam Pump Co., in Louisville, Ky., which have been located at 204 Keller building. The office sells in Kentucky and Tennessee, George W. Galbraith, of the Cincinnati offices, exercising supervision.

H. M. Hanna Jr. was elected a director of the American Ship Building Co., at the annual meeting of the stockholders at Jersey City, N. J., last week. He succeeds H. M. Hanna Sr. G. A. Tomlinson was elected to the directorate to succeed A. D. Wolvin. Other directors were re-elected.

Jonathan Bartley, formerly of the Jonathan Bartley Crucible Co., Trenton, N. J., has been elected president and general manager of the Bay State Crucible Co., Taunton, Mass. The company was formerly the Paige Retort & Crucible Co., the name having been changed recently. The capital stock has been increased from $50,000 to $75,000.

Harry W. Goddard, president and treasurer of the Spencer Wire Co., with plants in Worcester, Mass., and Spencer, Mass., who recently gave a hall to the employes' benefit association of the Spencer plant, has presented the recently organized benefit association at the Worcester works a substantial check, with which to start off its treasury.

E. T. McCleary, former assistant superintendent of the blast furnaces and steel department of the Youngstown Sheet & Tube Co., Youngstown, O., has been appointed assistant general superintendent, and T. B. Draper, former assistant superintendent of the skelp mills, succeeds Mr. McCleary, the latter succeeding Henry A. Butler, recently promoted to a position just created.

Silas J. Llewellyn, president and general manager of the Interstate Iron & Steel Co., Chicago, and his brother, John T. Llewellyn, vice president and general manager of the Chicago Malleable Castings Co., Chicago, have given to the city of Milwaukee, Wis., the site for a public library, which will be erected as a memorial to their father, Henry Llewellyn, a pioneer resident of that city.

Otto Frick, inventor of the Frick induction furnace for steel, will soon visit this country. While here he will introduce the latest types of induction furnaces for the iron and steel industry, which are handled by Dr. Karl Georg Frank, 1017-20 West Street building, New York City, representing Siemens & Halske, A. G. Berlin, Germany. The furnaces intended for the United States and Canada will be manufactured in this country.

L. H. Miller, formerly eastern representative of N. S. Bartlett & Co., Boston, and later of Hickman, Williams & Co., with headquarters in New York, has become a partner in the firm of Reed & Fears, 145 Milk street, Boston, dealers in pig iron and coke. The firm is now known as Reed, Fears & Miller, the change taking effect Oct. 15. Mr. Miller will continue to have headquarters at 30 Church street and to cover the trade in the same territory which he has in the past.

R. Y. Filbert was elected president of the New Haven Iron & Steel Co., at the annual meeting of the shareholders at Camden, N. J., on Oct. 7. Alfred C. Bruner was chosen vice president and C. Kennedy Crossan treasurer. Two vacancies on the board of directors were filled by the selection of Alfred C. Bruner and William G. Hollis, who succeeded the late A. Louden Snowden and Kennedy Crossan, respectively. Other directors chosen were Richard Y. Filbert, Robert Crane, Charles A. Porter Jr. and C. Kennedy Crossan.

Otto H. Falke, Milwaukee, who is receiver of the Allis-Chalmers Co., has been elected president of the Bullock Electric Co., Norwood, O. He succeeds Edward D. Adams of New York. Other officers of the Bullock Co., who were recently elected at the annual meeting of the board of directors, are: Vice president and general manager, E. T. Pardee; secretary and treasurer, L. F. Bauer; directors, O. H. Falke and M. W. Babb, of Milwaukee, and E. T. Pardee, E. J. Klyne and E. R. Knight, of Norwood.

Charles E. Pope, Pittsburgh, will be the active head of the newly organized Impervious Sheet Steel Co., which is building a plant at Rochester, Pa. He was formerly head of the Pope Tin Plate Co., Steubenville, O., which was sold last December. A. E. Daum, one of Mr. Pope's associates, will act as secretary and treasurer of the new company. H. M. Easton, assistant manager of sales of the Phillips Sheet & Tin Plate Co., has been appointed sales manager, and will assume the duties of that office Nov. 1. M. J. Ruse, well known sheet mill superintendent in the Wheeling district, will act as superintendent of the new works.

BRITISH AND CONTINENTAL MARKETS

London, Oct. 15. (By cable.)—Cleveland warrants 65s 4½d, a decrease of 10½d since Friday.

Office of THE IRON TRADE REVIEW,
Prince's Chambers, Corporation St.,
Birmingham, Eng., Oct. 5.

Cleveland pig iron market developed a downward price tendency at the beginning of the week, although the movement was confined mainly to speculative transactions. The chief disturbing factor was the impending Balkan conflict. The market opened strong on Monday, but declined steadily until on Thursday (Oct. 3) the top quotation dropped from 67s 3d to 66s 10d, although a good deal of iron changed hands. By the end of the week much brisker business had developed and price strength was discernible, No. 3 Cleveland going back to 67s 3d ($17), the price at the beginning of the week. Hematite iron was not affected by these movements, remaining at its old basis of 80s ($19.40). Apart from these disturbances the Cleveland market, as elsewhere, continued to gain strength. Connal's stores continue to diminish, yesterday's withdrawals bringing down the total to 275,913 tons. Coke is in ever increasing demand and fuel prices are stiffening every day.

All the heavy industries, notably ship building, structural engineering and machinery manufactures, are still exceptionally busy. Railway rolling stock companies are as busy as they can be, though the high price of material has made home railways somewhat shy in placing contracts. Sheffield works are running at extra pressure and there is every reason to anticipate that boom conditions will last for a considerable time. The armament, heavy gun, and war material departments are especially active. Manufacturers are not seeking orders and the commercial traveler largely finds his occupation gone. Great difficulty is experienced in obtaining steel billets. Prices of these are going up, and as the continent is also enjoying a boom in trade, relief from foreign supplies is hopeless at present. The steel forges are not doing anything like so well as are the mills, the latter running day and night, while the former find day-running sufficient.

GERMAN IRON TRADE

(Special Correspondence.)

Berlin, Oct. 1.

The trade situation can be gaged by the steady upward trend of prices. Since last week the iron merchants' association has advanced prices 5 marks per ton, making ordinary merchant iron 148 marks, screw iron 153 marks, horseshoe bars 151 marks for delivery in the first quarter. The rolled wire syndicate, which is in a state of dissolution, leaves prices for the first quarter unchanged, but the pipe syndicate, which has been proportionately extended to March 31, has advanced prices by shortening discounts by 8 per cent. Toolmakers in Upper Silesia have put their prices for the first quarter 5 to 7½ per cent higher.

The pig iron syndicate in opening its books for the first half-year, has put prices up an average of 3 marks per ton and if coke prices should be raised on April 1, a further rise of 1¼ marks will be made for each one mark advance in coke. Its report says that the rise of pig iron in England has caused an increased demand for export.

The Siegvalley ore syndicate intends raising prices for delivery after the end of this year. The monthly report of the steel syndicate on the state and prospects of trade could hardly read better than it does all branches, half-products, rails, sleepers, shapes, plates, etc., are full of orders for the home and foreign markets.

BELGIAN IRON TRADE

(Special Correspondence)

Brussels, Oct. 1.

The strength of the market in all branches is not only maintained, but is developing steadily. The demand is in excess of what the mills can undertake, and price rise, now in one branch, now in another. This week plates and sheets have been advanced 25 cents to $34 to $34.50 for plates, $34.50 to $35 for medium thickness, and $35.50 to $35.75 for thin sheets. Hoop iron is 50 cents dearer at $35.50 to $35.75; iron bars have risen to $30.75 to $31.25, and steel bars to $30.25 to $30.75 per ton (one ton equals 1,240 pounds) f. o. b. Antwerp, while for home consumption they are 5 to 7½ francs dearer, and small girders have gained 2½ to 5 francs. Rods for export are quoted $33 to $33.50 f. o. b.

PERRY FURNACE

At Erie, Pa., Sold to Pickands, Mather & Co.

The Perry furnace of the Perry Iron Co., Erie, Pa., has been purchased by Pickands, Mather & Co., Cleveland, and will be operated by a new company which will be organized in a few days. The Perry furnace is 75 x 17 feet, and construction was commenced July 25, 1906. It was completed and blown in June 16, 1907. Its capacity is from 7,500 to 8,000 tons per month and its product foundry and malleable pig iron. The officers of the Perry Iron Co. are, T. S. Clark, president; E. H. Williams, vice president and general manager; H. N. Flemming, secretary, and M. L. Mozier, treasurer. The new company will take possession immediately. The product will be sold by Pickands, Mather & Co.

Will Reopen Works

The rolling mill and chain works of the West End Iron Co., Lebanon, Pa., have been sold to the Columbus Chain Co., Columbus, O., by representatives of the bondholders who had purchased the property under foreclosure proceedings and it is reported that the plant will be placed in condition for early operations. It has been idle for several years, due to the financial troubles of the old Lebanon Chain Works Co.

The fifth annual meeting of the American Institute of Chemical Engineers will be held in Detroit, Mich., Dec. 4-6. A number of the technical plants about Detroit will be visited and a program of papers and addresses presented.

Stormy Sessions at Steel Corporation Hearings

Two Witnesses Prove Obstreperous and Attorneys Make Threats—

Freight Rates Discussed at Length—Recess in Sessions Until Oct. 28

Following an eight-day session in Pittsburgh, the counsel in the government's suit for the dissolution of the United States Steel Corporation adjourned the public hearings last Thursday and will not recommence the examination of witnesses until Oct. 28. On that date, the hearings will be resumed in Pittsburgh, for probably two or three days, after which, it is expected, they will be shifted to Cleveland.

The government last week devoted most of its attention to freight rates charged by various railroads, and especially by those owned by the Steel Corporation, for the transportation of iron ore. The witnesses who submitted the most important testimony in this respect were A. R. Kennedy, traffic manager of the Pittsburgh Steel Co., and H. W. Moore, traffic manager of the Republic Iron & Steel Co., who were of the opinion that rates charged by the Bessemer & Lake Erie, Duluth & Iron Range, Duluth, Messabe & Northern and other roads were too high. These and other witnesses also testified that the Steel Corporation, through its ownership of railroads, has a distinct advantage over its competitors. The cross-examination of Messrs. Kennedy and Moore, by Cordenio A. Severance, was enlivened by a constant verbal duel between witnesses and counsel, with the result that last Wednesday's hearings were the stormiest which have been held since the taking of testimony was commenced in New York last May.

Thomas W. Fitch, president of the Columbia Steel & Shafting Co., Pittsburgh, also told about the formation of the American Steel & Wire Co.; G. A. Steiner about the Schoenberger Steel Co., of which he was formerly second vice president; E. W. Mudge, of E. W. Mudge & Co., Pittsburgh, about the various advantages which the Steel Corporation has over its competitors, and B. F. Jones, president of the Jones & Laughlin Steel Co., about royalties paid on Mesabi range ores, and traffic contracts entered into with railroads for the transportation of ore.

The record of testimony in this case will be not nearly as voluminous as that collected by the Stanley congressional committee. So far, the typewritten record contains between 4,000 and 5,000 pages. It now appears that the government hearings will not be brought to an end in New York before late next spring. In the meantime, hearings will be held in Cleveland, Chicago, Washington and, probably, Birmingham, Ala.

Wednesday's hearings in connection with the government's suit for the dissolution of the United States Steel Corporation were the stormiest which have been held since the public taking of testimony was commenced last May. Appeals to the master to force witnesses to reply to questions, threats to summon them before the court, and vicious pounding of table tops were not unusual incidents in the day's proceedings.

The government had unearthed two unusually friendly witnesses who came to testify that the freight rates, especially on Lake Superior iron ore, charged by Steel Corporation railroads, were designed to benefit the Corporation at the expense of its competitors. The heated controversies resulted from the attempts on the part of the defendant's counsel to shatter this testimony.

The witnesses of the day were A. R. Kennedy, traffic manager of the Pittsburgh Steel Co., and H. W. Moore, who acts in a similar capacity for the Republic Iron & Steel Co. These witnesses were quite free in stating that the rates charged by Steel Corporation railroads were too high, but they were unwilling to say what they thought the rates ought to be. Their reason for withholding this information was evidently due to the fact that their companies now have complaints before the Interstate Commerce Commission regarding these identical rates, and that they did not desire to disclose any data at this time which might later prove of value to the railroads complained against.

A. R. Kennedy on Stand

The first witness examined was A. R. Kennedy, whose hearing was continued from Tuesday. He was questioned further regarding freight rates, length of hauls and volume of traffic over the railroads serving the Pittsburgh, Youngstown, Wheeling and other districts. The apparent intention of the government attorney, Barton Corneau, in asking these questions, was to show that the rate on ore, of 96 cents per ton from Conneaut, O., to North Bessemer, Pa., both being terminals of the Bessemer & Lake Erie railroad, was too high and that the Steel Corporation had an advantage over its competitors through its ownership of the Bessemer railroad.

Mr. Kennedy mentioned some of the rates which are now in effect on iron ore shipped from lower lake ports to the various districts. These were as follows: To the Pittsburgh district, 96 cents; Wheeling, 60 cents; Jackson, O., 60 cents; Josephine, Pa., 85 cents; Ironton, O., 90 cents; Cincinnati, 90 cents; Youngstown, 56 cents. The average distances to these districts from Cleveland, he said, are as follows: 135, 160, 217, 228, 265, 289 and 67 miles, respectively. By means of these statistics, it was shown that the ore rate to the Pittsburgh district, despite the fact that the distance traversed is less than that to other districts, is greater than that charged to the other localities. The witness was of the opinion that the rate of 96 cents is much too high, and he stated that the percentage of empty hauls was less in Pittsburgh than in any other district because of the coal which was shipped back to Lake Erie. Another advantage to the railroads, as pointed out by Mr. Kennedy, lay in the fact that most blast furnaces in the Pittsburgh district maintain their own locomotives for switching and "spotting" cars. This practice does not prevail to a large extent in other districts, he said.

Alleged Actual Costs

Asked by Mr. Corneau what was the actual cost of hauling ore from Conneaut to North Bessemer, Mr. Kennedy gave it as 28¼ cents per gross ton. He said this figure had been arrived at by Jean Paul Muller,

of Washington, D. C., and that it included the cost of delivering and hauling the ore, as well as allowing for the movement of loaded and empty cars.

"What do you think is the advantage of the Steel Corporation over its competitors as a result of its ownership of the Bessemer & Lake Erie railroad?" asked Mr. Corneau.

"It is represented by the difference between the paper rate of 96 cents and 28¼ cents per gross ton," replied Mr. Kennedy.

The witness then presented some data concerning the shipping of ore in the Lake Superior region and the ore railroads serving the various ports. Two Harbors is served by the Duluth & Iron Range railroad; Escanaba by the Chicago & Northwestern and the Chicago, Milwaukee & St. Paul; Marquette by the Duluth, South Shore & Atlantic and the Lake Superior & Ishpeming; Ashland by the Chicago & Northwestern and the Soo Line; Superior by the Great Northern and the Soo Line; Duluth by the Duluth, Missabe & Northern railway. The witness then submitted some statistics, secured from THE IRON TRADE REVIEW, showing the ore tonnage delivered at the upper lake ports during 1910 and 1909. He said the loaded movement on the D., M. & N. railroad was three times the volume on all the other above mentioned roads combined. Mr. Kennedy sharply attacked the 60-cent rate, which both the D., M. & N. and the D. & I. R. railroads charge, saying that the Soo Line, the D., S. S. & A. and the C. & N. W. railroads charge only 40 cents for performing the same service.

After saying that the Bessemer & Lake Erie railroad was a member of the Central Freight Association, the Trunk Line association and the classification committee, Mr. Kennedy was turned over to Mr. Severance of counsel for the defense.

Then Trouble Began

The trouble between the witness and Mr. Severance had a good beginning on Tuesday. The witness had just taken the stand and was answering the first question when Mr. Severance interrupted abruptly and said:

"I can't hear you, Mr. Kennedy. Will you kindly speak louder?"

"Take this seat then," said Mr. Kennedy shortly, indicating a chair that was nearer to him.

"I will sit where I please," Mr. Severance flared up, and it was evident that counsel and witness would be at sword's points during the examination.

In the cross-examination today, Mr. Severance immediately wanted to know if the witness would swear to his assertion that the Bessemer & Lake Erie was a member of the Central Freight Association, the Trunk Line association and the classification committee.

Two Formidable Witnesses

Since John Stevenson, of Sharon Pa., went to New York last June to tell about the sales of his various plants to the United States Steel Corporation and its subsidiaries, enlivening his testimony with a brilliant display of wit, no such variety has characterized the hearings as was provided last Wednesday by A. R. Kennedy and H. W. Moore, traffic managers, respectively, for the Pittsburgh Steel Co. and the Republic Iron & Steel Co. The companies with which Messrs. Kennedy and Moore are connected now have before the Interstate Commerce Commission a complaint to the effect that the ore rates charged from lower lake ports to the Pittsburgh and Youngstown districts, and from the mines to Lake Superior ports, are too high. They were accordingly very wary of answering any questions that to them appeared designed to elicit information which might prove of value to the railroads complained against. On one occasion, Mr. Severance, in cross examination, was questioning Mr. Kennedy as to the capacity, growth etc., of the Pittsburgh Steel Co. To these queries the witness generally replied that he "didn't know". He suddenly interrupted Mr. Severance by asking:

"What do you want this information for; is it for this case?"

Mr. Moore proved an equally sterile source of information on cross examination, and, becoming highly indignant at certain questions which Mr. Severance was putting to him, he exclaimed:

"Mr. Severance, you are trying our valley ore case here!"

"No," said the witness, "that was only what I heard."

"Whom did you hear it from?" shouted Mr. Severance.

"I decline to answer," said the witness with a glare of defiance.

"I insist upon an answer."

"I decline to tell you."

"I appeal to the master," said Mr. Severance angrily, "to force the witness to reply."

"I have no authority to force the witness to reply if he does not see fit to do so," replied John A. Brown, who was in the master's chair in place of H. M. Brown, his father.

"I suggest that we summon the witness before the court," interjected Mr. Bolling, who also appeared incensed.

"No," said Mr. Severance, after a moment's hesitation, "we may be able to get what we want from him without that."

Mr. Severance next wanted to know if, in stating that the Steel Corporation's advantage over its competitors in the Pittsburgh district was the difference between 96 cents and 28¼ cents, the witness had taken into consideration any interest or maintenance charges. The witness said he had not and that, providing such an allowance had not been made by Mr. Mueller, he would modify his statement by saying that this advantage would be the difference between 96 cents less the 28¼ cents plus a sum sufficient to allow for the interest on the investment and the cost of maintenance.

Costs Were Questioned

"Mr. Kennedy," said Mr. Severance, "you have stated that the cost of hauling ore from Conneaut to North Bessemer, Pa., is 28¼ cents, plus an interest and maintenance charge. Why did you testify before the Interstate Commerce Commission that the cost was 26 cents and that this included delivery right into the Duquesne, Pa., yard?"

"I was mistaken at the time."

"Then you will correct your statement when you have another chance to testify before the Interstate Commerce Commission?"

"I will," said the witness.

Judge J. M. Dickinson, of government counsel, interrupted at this point and objected to Mr. Severance's manner of procedure on the ground that he was trying to intimidate the witness.

"You can't intimidate this man. You don't know him," said Mr. Severance.

"Thank you," said the witness, suavely, while Judge Dickinson said angrily:

"Put this into the record: I object to counsel's procedure as being improper."

In further cross-examination, Mr. Severance endeavored to ascertain some facts as to the history, capacity for production, amount of new

construction, etc., of the Pittsburgh Steel Co., and this line of questioning led to another wordy combat with the witness. The witness' stock reply was that he "did not know."

"Has the Pittsburgh Steel Co. erected any buildings in recent years?"

"I wouldn't be surprised if it had."

"I don't think anything would surprise you."

"I don't think it would," returned the witness.

The witness finally admitted, reluctantly, that the annual steel output of his company is about 400,000 tons per year; also that there has been a certain amount of new construction by the company of late, but he didn't know any details.

"You don't know?" asked Mr. Severance. "Do you receive a salary from the Pittsburgh Steel Co?"

Judge Dickinson objected on the ground that this entire line of questioning was immaterial, irrelevant and improper, after which the witness admitted that he receives a "slight salary."

"Did you receive one five years ago?"

"Why, yes, I think I did, a slight one."

Explained Freight Rate

Mr. Kennedy explained that the Pittsburgh Steel Co. pays a freight rate of 10 to 50 cents a ton on its coal. It pays 90 cents a ton on its pig iron. He also told something about the Lake Terminal railroad which charges 10 cents per ton on ore for delivering it upon the tracks of the Lake Shore railroad. The Lake Terminal line loads the cars at the ore dock at Lorain, weighs and trims them and hauls them about 4 or 5 miles before turning them over to the Lake Shore. He also said that the Steel Corporation, working to full capacity, consumes 11,000,000 tons of ore annually in the Pittsburgh district; about 40 per cent of 9,600,000 tons in the Youngstown district; 2,000,000 in the Wheeling district and 360,000 at Columbus.

Mr. Severance moved that inasmuch as most of Mr. Kennedy's testimony was based on figures prepared by J. P. Muller, it be stricken from the records. He compromised with Mr. Corneau, however, who promised to produce Mr. Muller for examination at an early date.

Henry W. Moore Testified

Henry W. Moore was next called to the witness stand and asked to explain in what connection he had learned of freight rates, etc. He said that he has acted for years as traffic manager for the Republic Iron & Steel Co. He further stated that he has studied freight rates, length of hauls, etc., very carefully of late in connection with the complaint of his company and others filed with the Interstate Commerce Commission, in which they allege that the rates of the railroads operating in the Youngstown district are too high.

Mr. Moore stated that the 60-cent rate charged by the Duluth, Missabe & Northern railroad for the transportation of ore to Lake Superior ports is entirely too high. He said that the cost of such transportation is no more than 25 cents per ton. This, he said, included interest on investment.

Reduction Would Not Benefit Steel Corporation

During the cross examination of A. R. Kennedy, Cordenio A. Severance, of counsel for the defense, brought out an interesting point in connection with the rate complaint now before the Interstate Commerce Commission.

In case a decision favorable to the middle western steel manufacturing interests should be handed down, and the 96-cent rate on Lake Superior iron ore to the Pittsburgh district be reduced, while the independent companies would derive a benefit, the Steel Corporation would experience none.

Should the ore-carrying rate on the Bessemer & Lake Erie railroad be reduced, the Steel Corporation's manufacturing subsidiary, the Carnegie Steel Co., would simply be the gainer to the same extent as the railroad subsidiary would be the loser.

"At this rate," said he, "for every two tons of ore which the Steel Corporation road hauls for us, it can haul two tons of its own ore and still have 20 cents left to put into its pocket."

Mr. Severance then asked the witness to state what he thought the rate ought to be. The witness refused to answer this, however, stating that he was not willing to give at this time his opinion as to what would be a reasonable rate. Mr. Severence argued, pleaded and commanded the witness to make a reply until finally Mr. Moore became highly incensed, pounded the table before him and told counsel it was none of his business.

"Mr. Severance," he vehemently asserted, "you are trying our valley ore case here."

Mr. Severance wanted to know about the meeting which the representatives of the valley steel companies had with railroad officials prior to the time that the freight rate complaint was lodged before the Interstate Commerce Commission. Such a meeting was held, said Mr. Moore, but it had no satisfactory result as the railroads later advised that they would not grant a reduction.

"Don't you think the Steel Corporation, in connection with its plants in the valley, is penalized as severely by these unjust freight rates as any of the other companies?" asked Mr. Severance.

"Yes," replied Mr. Moore, "but only 14 per cent of the Steel Corporation's capacity, is in the valleys. Hence, while this penalty is exacted on only 14 per cent of the Steel Corporation's capacity, it extends to 100 per cent of the capacity of its competitors in the valley."

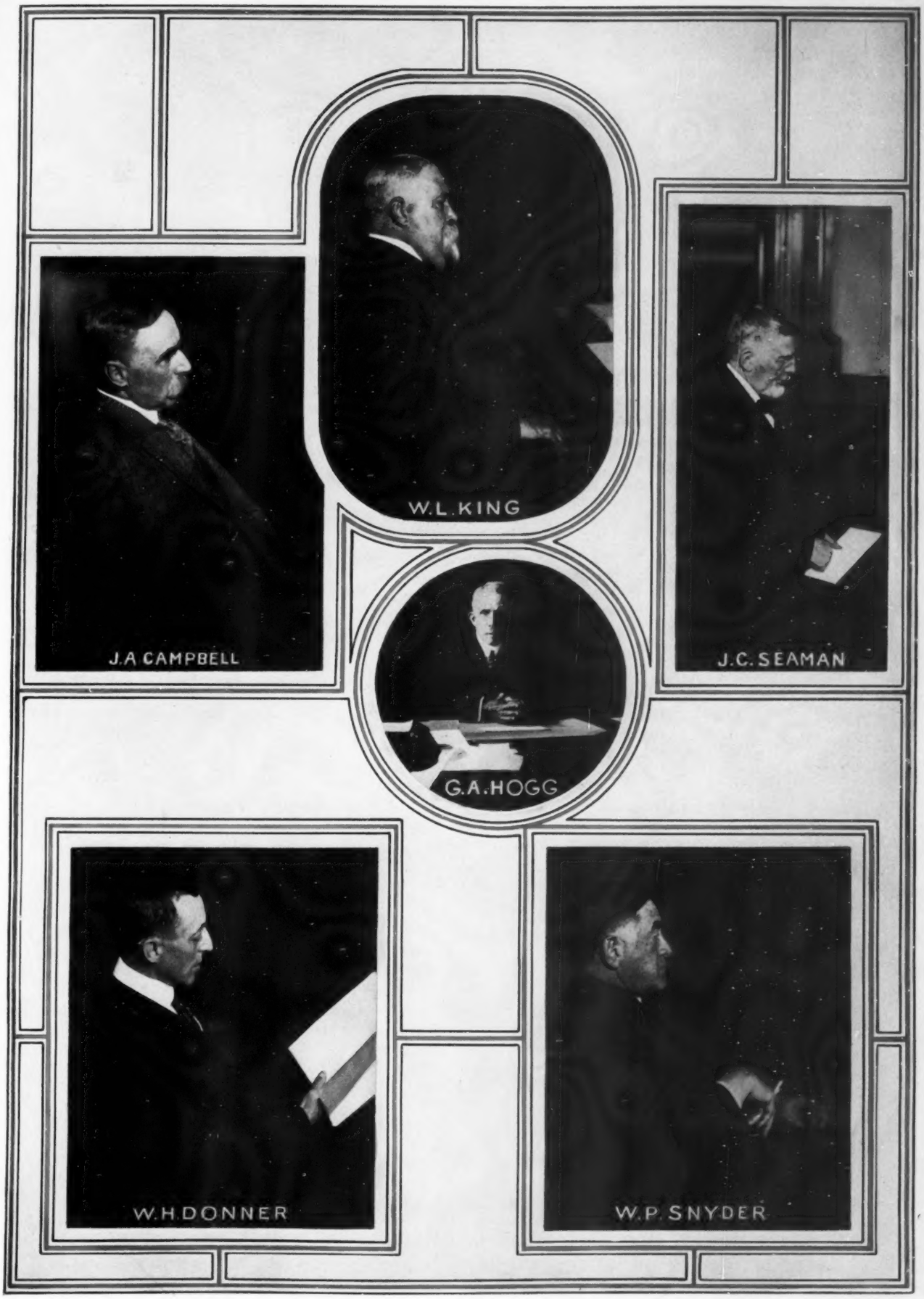
Regarding the 26 cents of the 96-cent freight rate between Conneaut and North Bessemer, Pa., which goes to the Union railroad for switching the ore cars off the trunk line of the Bessemer & Lake Erie into the yards, Mr. Moore said that 10 cents would be sufficient. He said that he supposed 26 cents was charged in order that the gross earnings of the Bessemer & Lake Erie might not appear too large.

Asked if he believed the statement that the Steel Corporation could put all its competitors out of business should it care to do so, Mr. Moore said:

"Assuming that we are on a parity as to raw materials, we could compete, except in transportation."

He said he believed that in a time of great stress, such as a general strike, panic, etc., the Steel Corporation could wipe out its competitors.

After once more hammering at the witness as to what would be a reasonable freight rate on ore delivered to Lake Superior ports, Mr. Moore was finally caught unawares and informed counsel for the defense that, according to Mr. Muller's calculation, 40 cents would be an ample rate. This admission afforded great satisfaction to Mr. Severance.

A number of witnesses were examined on Thursday, including A. R. Kennedy, traffic manager of the Pittsburgh Steel Co.; Thomas W. Fitch, president of the Columbia Steel & Shafting Co.; G. A. Steiner, formerly second vice president of the Schoenberger Steel Co.; Edmund Webster Mudge, of E. W. Mudge & Co.; and

SOME OF THE PROMINENT WITNESSES AT THE STEEL CORPORATION HEARINGS AT PITTSBURGH

Insert THE IRON TRADE REVIEW, *Oct.* 17, 1912.

B. F. Jones and Willis L. King, president and vice president, respectively, of the Jones & Laughlin Steel Co.

Included Maintenance Cost

A. R. Kennedy, who was on the stand on both Tuesday and Wednesday, was recalled for re-direct examination. Mr. Corneau, of cousel for the government, requested him to refer to Mr. Muller's report and ascertain whether the 28¼ cents which he gave as the actual cost of transporting a ton of iron ore from Conneaut, O., to North Bessemer, Pa., included an allowance for the cost of railroad maintenance. This the witness did, replying that such an allowance had been provided for.

"In testifying before the Interstate Commerce Commission, on what did you base your figure of 26 cents, which you then said was the cost of transporting the ore between these two points?" asked Mr. Corneau.

"I based it on the report of Senator George T. Oliver, of Pittsburgh, who conducted an investigation into this cost; on the report of the general manager of the Bessemer & Lake Erie railroad for 1910; and on the testimony of Mr. Freer, before the Stanley committee," replied Mr. Kennedy.

Thomas W. Fitch Testified

Thomas W. Fitch was next questioned by Judge J. M. Dickinson in regard to his connection with the wire and wire nail industry prior to the time the American Steel & Wire Co. was formed. He said that he organized the Braddock Wire Co. in 1885. This later was sold to the Consolidated Steel & Wire Co. He next organized the Pittsburgh Wire Co. in 1889. This company manufactured wire and wire nails. It also owned a couple of barbed wire machines which it had purchased as second hand. Mr. Fitch said that John W. Gates, in beginning the movement which led to the formation of the American Steel & Wire Co., first purchased stock in the Pittsburgh Wire Co. His second step was to buy out John Stevenson at New Castle, Pa. The original stockholders of the Pittsburgh Wire Co. were required to sign a contract to the effect that they would not re-engage in the manufacture of wire and wire nails in this country, with the exception of Florida and Arizona, within ten years.

Judge Dickinson questioned the witness regarding price "pools", and the latter said that while his company was always able to make profits prior to the formation of the "pools" in 1896, yet prices were higher afterwards and his company benefited accordingly. Mr. Fitch also told about conditions which obtained in the industry prior to the time of formation of the American Steel & Wire Co. and named the companies which then manufactured barbed wire. Judge Dickinson's evident intention was to prove that the American company had a monopoly of this branch of the industry when it was first organized. The witness said, however, that he did not believe that the American company had such a monopoly unless it was by means of the "pool, of which John W. Gates was the head."

Mr. Fitch was recalled to the stand later. In the meantime he had telephoned for a copy of the contract which had been signed by the stockholders of the Pittsburgh Wire Co., which provided that they would not re-enter business within 10 years. This contract was accordingly filed in the testimony. It bore, among others, the signatures of John W. Gates, Isaac Elwood and Thomas W. Fitch.

Mr. King a Horticulturist

One day last week, following a session on the witness stand, Willis L. King, vice president of the Jones & Laughlin Steel Co., appeared at the hearings and, calling Judge Dickinson to one side, produced a booklet which the Judge examined with much interest while Mr. King explained its contents. To the casual observer it appeared as though a valuable piece of documentary evidence was about to be introduced. Judge Dickinson thanked Mr. King for the booklet and took it to his seat, where he showed it to his colleagues. All were much interested.

It was a catalog of different varieties of gladioli.

Visit Homestead

Following the adjournment of the hearings last Thursday, the lawyers engaged in the case were invited to visit the plant of the Carnegie Steel Co., at Homestead, that night. John A. Brown, who took his father's place as special master last week, accompanied them. The experience was a novel one for Mr. Brown, as he had never before been through a plant of this magnitude.

The witness was excused, after stating that the Pittsburgh Wire Co., prior to the time it was sold out, bought its billets mainly from the Carnegie and Schoenberger Steel companies and also some from the Pennsylvania and Jones & Laughlin Steel companies.

G. A. Steiner on Stand

The next witness was G. A. Steiner, formerly second vice president of the Schoenberger Steel Co., of Pittsburgh. He said that the company operated a plate mill, blooming mill, skelp mill, horseshoe mill, Bessemer converters, two blast furnaces and owned and operated coal lands and coke ovens. Its output was from 200,000 to 225,000 tons of steel annually. The plant was sold to the American Steel & Wire Co., for $3,600,000.

E. W. Mudge Next Witness

E. W. Mudge, of Pittsburgh, was then called to the stand and testified that he has been in business since 1887. From 1895 to 1901, he was with the Charles E. Pope Co. and testified that that company purchased its sheet bars from the Ohio Steel Co., the Bellaire Steel Co., and the Junction Steel Co. After the formation of the National Steel Co., in 1899, said Mr. Mudge, it was hard to secure bars and they could only be secured then on the assurance that they would not in turn be sold to independent tin plate mills. Mr. Mudge said that he thought that the National Steel Co. was formed for the double purpose of providing a raw material supply for the American Tin Plate Co. and tying up the raw material supply for independent mills.

Mr. Mudge built the Pope tin plate mills in 1901. This concern purchased its tin bars from the Sharon Steel Co. and from another company. In his connection with La Belle Iron Works, Mr. Mudge said he always found the Steel Corporation to be a fair competitor.

Mr. Mudge was asked to tell what he thought were the principal advantages possessed by the Steel Corporation over its competitor. He said these advantages were: Ownership of railroads, good plant locations and "mighty good management." Because of the location of its works, said Mr. Mudge, the Steel Corporation is able to assign orders to the various mills in such a manner as to take advantage of the lowest freight rates.

Asked if the Carnegie Steel Co. was able to compete with the Illinois Steel Co., in the west prior to the formation of the Steel Corporation,

Mr. Mudge said that the Carnegie company could always sell over the entire country. The witness, however, said that the Illinois Steel Co. was never able to take care of the western demand by itself.

B. F. Jones Testified

B. F. Jones, president of the Jones & Laughlin Steel Co., was called to the stand by Judge Dickinson to testify in regard to matters connected with the Lake Superior iron ore mining regions. Mr. Jones said that his knowledge of this district was not very thorough prior to 1900 and 1901, but that at that time he made a very careful investigation in order to select good ore property for the Jones & Laughlin company. He said that prior to 1901, royalties paid on ore averaged 25 cents a ton. In 1901, the Jones & Laughlin company paid 30 cents a ton on the Grant mine on the Mesabi range. The bonus paid on this mine, including two other mines, was $950,000. The ore in these three properties amounted to about 22,500,000 tons.

Mr. Jones testified that his company has made traffic contracts for all its ore properties, with the exception of two mines, which are being held in reserve. The latter, however, represent less than 10 per cent of the total holdings of the Jones & Laughlin Steel Co. Of the ore which is now under traffic contracts, 16 per cent is under contract with the Steel Corporation roads and 84 per cent under contract with the Great Northern. These contracts were originally drawn in 1901-02, for periods of 50 years. During the past 10 years, Mr. Jones said, 40 per cent of the ore shipped by the Jones & Laughlin Steel Co. was shipped over the Great Northern road, but this was due to the fact that the mines in one locality have been worked to a greater extent than in the others.

Willis L. King Recalled

Willis L. King, who testified earlier in the week, asked permission to take the stand and supplement his testimony. He said he had thought over his statement to the effect that there were no price agreements after 1904. This, he believed, was too sweeping a statement.

"I just want to say," he said, "that I might have testified incorrectly as there may have been agreements later than that."

He said that he did not remember any agreements entered into after 1904, however. He also stated that he was sure there were none after the early part of 1906.

FAVORABLE REPORT

Made by Lackawanna Steel Co. for Third Quarter.

A very favorable report of earnings which is significant of the more profitable operations of the steel companies in general at present and of the fact that the industry is now emerging from the period of very low-priced contracts, is presented by the Lackawanna Steel Co. for the third quarter ended Sept. 30, 1912.

The company shows total earnings from operations during the third quarter of $1,254,985.93, compared with $799,936.15 for the corresponding period of 1911, or an increase of $455,049.78. The surplus for the third quarter was $386,256.69, compared with $40,070.54 in 1911, or an increase of $346,186.15. During the first two quarters of the present year, a deficit of $265,226.21 was shown by the company's operations. The unfilled tonnage on Sept. 30 was 569,977, compared with 189,898 on the same date in 1911, an increase of 380,079.

Comparative statement of the income account for the third quarters and of the nine months ended Sept. 30 of the years 1912 and 1911 is given in the above table.

LACKAWANNA STEEL CO. AND SUBSIDIARY COMPANIES COMPARATIVE STATEMENT OF INCOME ACCOUNT

	Third quarter 1912	1911	Inc.
Income from manufacturing	$1,033,943.95	$635,348.62	$398,595.33
Earnings on investments in other companies.	221,041.98	164,587.53	56,454.45
Total	$1,254,985.93	$799,936.15	$455,049.78
Int. on Lacka. Steel bonds and debentures..	$ 437,487.49	$437,500.00	
Balance	$ 817,498.44	$362,436.15	$455,062.29
Sinking fds. on bonds and exhaus'n of min'ls	$ 108,940.74	$ 86,867.09	$ 22,073.65
Depreciation and renewals	322,301.01	235,498.52	86,802.49
Total deductions	$ 431,241.75	$322,365.61	$108,876.14
Surplus	$ 386,256.69	$ 40,070.54	$346,186.15
Unfilled orders (gross tons)	569,977	189,898	380,079

Balances at Oct. 1, 1912	
Accounts receivable	$5,653,121.44
Cash on hand	4,424,221.04
Securities purchased	711,120.00
Current liabilities	1,390,647.68

	Nine months 1912	1911	Inc.
Income from manufacturing	$1,849,051.92	$1,907,084.03	*$ 58,032.11
Earnings in other companies	606,764.63	499,213.10	107,551.53
	$2,455,816.55	$2,406,297.13	$ 49,519.42
Int. on Lacka. Steel bonds and debentures.	$1,312,470.82	$1,312,500.00	*$ 29.18
Balance	$1,143,345.73	$1,093,797.13	$ 49,548.60
Sinking f'ds on bonds and exhaus'n of min'ls	$ 270,711.68	$ 201,058.78	$ 69,652.90
Depreciation and renewals	851,603.57	$ 745,094.46	106,509.11
Total deductions	$1,122,315.25	$ 946,153.24	$176,162.01
Surplus	$ 21,030.48	$ 147,643.89	*$126,613.41

*Decrease.

Buys Works Site.—On account of the extensive railway construction work which is in progress in Toronto and neighborhood, the Dominion Bridge Co., of Montreal, has secured a 10-acre site at Islington, a few miles west of Toronto, where it will erect large steel and assembling shops and storage sheds.

Allis-Chalmers Co. Shows Gain

The reorganization committee of Allis-Chalmers Co., Milwaukee, of which James N. Wallace, president of the Central Trust Co., New York, is chairman, has issued a report on the company's recent operations, which shows encouraging progress. The net profits for June were $25,642, for July $66,984, and for August $48,471. The average monthly sales during these months have been 17 per cent more than the average of the first five months of the year and the average monthly orders much greater. Unfilled orders on Dec. 31, 1911, were $3,453,085, as against $5,195,669 on Aug. 31 of this year. Overhead administration and selling expenses have been reduced $40,000 a month. as compared with these items during the several years past. Otto H. Falk, the receiver, states that the assets on Aug. 31 were $9,526,954 and the liabilities $2,198,779. The company has $1,480,798 in cash.

LATEST MACHINERY NEWS COLLECTED IN LEADING MANUFACTURING CENTERS

In New York, machinery dealers have noted a hesitancy on the part of buyers to place orders during the past week, compared with the volume of September business. The reduced buying is attributed to pre-election conservatism, and without significance beyond the passing of that event. That there is no abatement in the volume of inquiries is pointed to as evidence that good business is assured for some time. This view is strengthened further by the miscellaneous character of both the orders that are booked and in prospect, and the wide distribution of originating points. A striking instance of the optimism prevailing in this market is the recent announcement of a general price increase averaging 5 per cent, on all its products, made by the International Steam Pump Co. This is a line on price movements among manufacturers of other lines of machinery. While some orders have been placed by the railroad companies in this territory, for general shop equipment, business from that source is still far below what needs of the roads would seem to justify. A number of specifications are out for electric traveling cranes and general hoisting machinery. Manufacturers of pneumatic tools and air compressors are being pushed to capacity to keep up with orders. In practically all cases where specifications are outside of standard lines, delivery dates are lengthening. Recent official information concerning the New York, New Haven & Hartford machine tool list is that the requirements for the Van Ness shops will be closed within the next two weeks. Action will not be taken on the items intended for other points until that business has been settled.

In Pittsburgh, the machinery market has been fairly active during the past week. Few large sales were made, but a very satisfactory volume of business in small lots was transacted. While this activity extended to practically all lines, the demand for cranes was especially heavy. The companies that purchased this class of equipment last week included the Wheeling Sheet & Tin Plate Co., Wheeling, W. Va.; the American Vanadium Co. Pittsburgh, and the Carbon Steel Co., Pittsburgh. The Pittsburgh Valve, Foundry & Construction Co. Pittsburgh, and the Westinghouse Electric & Mfg. Co., Pittsburgh, were among the companies to enter the market for machine tools last week. A considerable volume of inquiry, for all kinds of machinery, is now before the trade, and dealers expect a great deal of this to result in actual business. From reports in general, September appears to have been a very good month, reflecting the improvement in demand which characterized the preceding three or four months. No action has yet been taken on the large list of machinery specifications recently issued by the Pennsylvania Lines West. This is the only large list now before the trade. In rolling mill equipment, the Mesta Machine Co. has just taken a large contract for some machinery to be installed at Gary, Ind.

In Cleveland, the first half of the month has shown a falling off compared with the corresponding periods of September and August. While the slackening is general, the dealers are of the opinion that it is permanent and are looking forward to the closing half of the month with some optimism. The unrest in the political situation is felt by some to be exerting a belated influence on the market. The business done during the past week was not as well scattered as in previous weeks, some good-sized orders being closed, but the volume of small business showed a decrease. The second-hand machinery market is fairly active, while cranes are in heavy demand.

In Cincinnati, the machinery market has improved and business during October should equal that of September. It is not expected, however, to reach the high level attained in July or August, as the former month was one of the best for some years. The demand for second-hand machinery is encouraging. This line of the trade has been unaccountably dull for some time. Foundries depending upon machine tool trade are running about 65 or 70 per cent, and according to jobbing orders on their books, have a good outlook for the rest of the month. Electrical machinery is still in good demand, as has been the case for some time, and business with local manufacturers is holding its own, with decidedly good prospects for some time to come.

Power Plant Equipment

The citizens of Churdan, Ia., are reported to have voted to issue $10,000 bonds for an electric light plant.

A gasoline engine and other power machinery will be needed by S. S. Strother, who is erecting a large flour mill at White House, Tenn.

The Central Iowa Light & Power Co. is considering an expenditure of $90,000 for improvements to its system, including the construction of a substation at Fort Dodge, Ia.

A water power plant will be built by the Beech Valley Milling Co., Adams, Tenn. The design is in the hands of S. M. McMurray, Nashville, Tenn.

The bid of $149,700, made by the Allis-Chalmers Co., Milwaukee, was the lowest made for electric light turbines and generators for the new municipal light plant at Cleveland. The contract will probably be let in a week. Other bidders were the Westinghouse Co., $165,526, and the General Electric Co., $154,000.

The Indianapolis Light & Heat Co. is making preliminary arrangements for the enlargement of its power plant on Mill street, Indianapolis. A new steam turbine and new equipment in the boiler room will be installed.

The Stone Fort Power Co., Manchester, Tenn., will build a large hy-

dro-electric power plant at Little Falls, Tenn. Service to Manchester and other cities is contemplated. W. G. Cummings, John Chumbley and H. T. Brown are interested.

The Farmers' Phosphate & Fertilizer Co., Nashville, Tenn., will develop large deposits of phosphate in middle Tennessee, and will require mining, grinding and drying equipment, as well as boilers, engines and other power machinery.

The city council of Wyandotte, Mich., is reported to have authorized the city clerk to procure bids for a new electric generating unit for the municipal electric light plant, the equipment to include either a 250-kilowatt turbine or a condensing engine.

The board of public works of Newark, N. J., has recommended the construction of an electric light plant in connection with the proposed garbage disposal plant for that city. The recommendation was for an expenditure of $250,000 for the establishing of the lighting plant.

Machine Tools

The Pittsburgh Valve, Foundry & Construction Co., Pittsburgh, purchased one 10-foot Cincinnati boring mill last week.

The Platt Iron Works, Dayton, O., has placed a large order for machine tool equipment with Manning, Maxwell & Moore, Inc., New York.

The Harrisburg Pipe & Pipe Bending Co., Harrisburg, Pa., is inquiring for a small number of large size turret lathes, in the New York market.

The Shade Adjuster Co., Memphis, Tenn., is equipping a machine shop for the manufacture of a metal specialty. Die presses, lathes, etc., are wanted, as well as electric motors.

The Putnam Machine Co., Fitchburg, Mass., exhibited at its works, during the past week, the 1912 model, 42-inch, steel tire coach-wheel lathe. The machine was demonstrated daily, bringing into prominence several new features, and was inspected by a large number of railroad men.

Water Works

The citizens of Waterford, Wis., have voted to construct a waterworks system at a cost of $15,000.

At a special election in Waterford, Wis., it was voted to issue $15,000 in bonds, for the purpose of constructing waterworks system and power station.

The city of Yorkton, Sask., has appropriated $177,000 for various public improvements, including extensions of the waterworks and electric light system.

Covington, Ky., is considering issuing $60,000 of bonds for the purpose of improving the waterworks. A new engine will be installed. Address City Commissioner Bauer.

R. E. Rieke, city recorder, Kingsley, Ia., advises that the citizens recently voted to construct waterworks from plans of K. C. Gaynor, Sioux City, Ia.

The citizens of Bowmanville, Ont., have adopted by-laws to raise $150,000 for waterworks and sewerage systems. A supply of water is to be obtained by gravitation from springs 9 miles northeast of the town.

New Buyers

(In order to assist the post office in delivering letters to new concerns, it is suggested that the names of incorporators be written in the lower left hand part of every envelope addressed to such new companies.)

The following manufacturing companies have filed articles of incorporation:

Detroit Wire Fabric & Mfg. Co., Detroit; $150,000; by John S. Barnes, Roy L. Goodale and Hugh L. Minds.

Smokeless Fuel Co., Boston; capital stock, $10,000; by directors, William A. Jepson, president; Fred A. Perkins, and Clark B. Partridge.

Schenck Machine Co., Milwaukee; $35,000; by Charles W. Schenck, A. A. Huppert, A. R. Bucholz, Adele Schenck.

Peoria Signal Mail Box Co., Peoria, Ill.; $25,000; to manufacture receptacles; by Elva C. Gingrich, Geo. H. Myers, Ralph Jester, all of Peoria.

The Economy Water Heater Co., St. Louis; $50,000; to manufacture, sell and deal in gas water heaters; by John W. Ellebrecht, Leo. J. Bayer, F. W. Maury and A. D. Tibbals.

Sterling Trolley Base Co., Newark, N. J.; $150,000; to manufacture sterling trolley bases; by B. Helwig, Edw. L. Klump, F. Bentsen, all of 359 Oraton street, Newark.

Benton Motor Car Co., Benton, Ill.; $65,000; to manufacture automobiles and accessories; by Harry Stotlar, W. S. Cantrell, A. H. Fraunfelder, all of Benton.

Pope-Hartford Co., Boston; to manufacture and deal in automobiles; capital stock, $100,000; by directors, Geo. L. Dodd, president; Charles W. Cousens, treasurer, and Fred H. Lucas.

Rambler Motor Car Co., Haverhill, Mass.; capital stock, $10,000; by directors, James P. Mollay, president; Geo. A. Burnham, treasurer, and Charles S. Goodwin.

International Automatic Railway Fan Co., Boston; to manufacture and sell fans; capital stock, $10,000; by directors, John T. Cowles Jr., president; Herbert J. Cary, treasurer, and H. Austin, Lowell.

Wade Foster Co., Boston; to manufacture and repair electrical and gas welding machinery business; capital stock, $15,000; by directors, Robert Morrison Jr., president; Miner Chipman, and Wade Foster.

N. N. Hill Brass Co., Chatham, Ct.; capital stock, $200,000; by incorporators, Norman N. Hill, of East Hampton, Ct.; Thomas C. Perkins and Philip S. Ripley, of Hartford; corporation succeeds company of same name, which has been dissolved and is now re-incorporated.

Craemer Nail & Supply Co., Manhattan, New York City; $10,000; to manufacture, produce, buy and sell cement coated nails; by Henry Craemer, 66 East Eighty-sixth street; William Craemer, 62 East Eighty-seventh street, and Frederick H. Hurdman, 20 Nassau street, all of New York City.

New Construction

The new foundry of the Fairmont Machine Co., Fairmont, Minn., is rapidly nearing completion.

The Sharon Steel Hoop Co., Sharon, Pa., is contemplating the erection of an office building, 60 x 100 feet, two stories, of brick construction.

The Commonwealth Steel Co., Granite City, Ill., will erect a pattern shop. The building will be one story, 22 x 80 feet.

The Arcade Malleable Iron Co., Worcester, Mass., is to erect a storage building, 20 x 24, two stories, of reinforced concrete construction.

The American Car & Foundry Co. will erect a machine shop at Madison, Ill. J. H. Ames, 80 East Jackson blvd., Chicago, will receive bids.

D. S. Plumb, East Park street, Newark, N. J., has been granted a permit to construct a three story factory, 80 x 100 feet, at Norfolk and Dickinson street to cost $28,000.

Anderson Bros., Latrobe, Pa., have received the contract for erecting a one-story frame hammer shop for the Vanadium Alloys Steel Co., that city.

A permit has been taken out for a foundry for the Reading - Bayonne Steel Casting Co., Reading, Pa., to be erected at the southwest corner of

Lafayette and Tulpehocken streets. It will be one-story, iron slag roof, 62 x 200 feet. The estimated cost is $12,000.

The Valley Forging Co., Verona, Pa., has awarded a contract to the Lawrence Steel Construction Co., Pittsburgh, for an addition, 50 x 175 feet, to be erected at once.

The Hardwick Stove Co., Cleveland, Tenn., is erecting an addition to its foundry, and will require foundry equipment and finishing machines. E. M. Pratt should be addressed.

The Whitney Manufacturing Co., Parkville, Ct., which manufactures chain drives for automobiles, is to erect a $40,000 addition to its plant. The new structure will be 40 x 180 feet, two stories.

Brazilian Consul General Manuel Da Cunha, located in New York, is advertising for bids for the construction of a number of rubber manufacturing and refining factories, to be established in Brazil.

The Louisville, Ky., Railway Co., which plans to construct repair shops, as was recently announced, is considering the establishment of a foundry and the manufacture of its own castings. This will be an innovation if the plan is adopted.

The Raymond Concrete Pile Co., Chicago, with eastern offices at 90 West street, New York, has been awarded the contract to construct a set of stock-bins at furnace "B", of the Maryland Steel Co., Sparrows Point, Md.

The Baldwin Chain Co., Worcester, Mass., is to erect a two-story addition, 64 x 83 feet, and a one-story addition, 42 x 71 feet, to its plant in Chandler street. The new structures will be of brick, mill construction, with tar and gravel roof.

The Helwig Mfg. Co., St. Paul, Minn., is contemplating the erection of a large factory building which will be of concrete and steel construction. Plans are being prepared and it is expected that a site will be secured in the very near future.

Preliminary work has been begun at Fort William, Ont., on the plant of the Great West Wire Fence Co., the contract for the building having been awarded to G. H. Archibald, of Winnipeg. The building will be of steel and concrete, 125 x 200 feet. The cost, including equipment, is estimated at about $100,000.

The American Malleable Co., Buffalo, has let a contract for remodeling its foundry building. An addition, 100 x 150 feet, will be made. The woodwork of the present building will be replaced with brick. A material increase in capacity will be effected by the changes. John G. Brown, engineer, Witherspoon building, Philadelphia, will have charge of the reconstruction.

The Western Crucible Steel Casting Co., Minneapolis, Minn., is prepared to start on the erection of a new plant with a floor space of approximately 31,000 square feet. This will be of the most modern concrete and steel construction and the building will be designed so that later open-hearth steel furnaces can be installed. Plans have already been prepared and construction will be started at once.

For the purpose of extending its plant at Harrison, N. J., the Crucible Steel Co. of America has purchased a tract of about 200 lots, comprising seven blocks, running along South Fourth street and extending from the roadbed of the Pennsylvania railroad to the Passaic river. The Crucible company's plans for the purchase involve, it is reported, with the improvements already under way, an expenditure of more than $1,000,000 for new buildings to extend the company's plants.

General Industrial

The Safford Radiator Corporation, of Detroit, has filed articles of incorporation at Dover, Del., with a capital of $10,000,000.

Davidson and Robertson counties, Tennessee, will build two 52-foot and two 75-foot steel spans over Sycamore creek. Howard M. Jones, Nashville, Tenn., is the engineer.

The Brauer Bros. Mfg. Co., St. Louis, Mo., has increased its capital for the purpose of installing additional equipment for the manufacture of stove parts.

The Hopkinsville Cadillac Co. has been incorporated with $10,000 capital stock at Hopkinsville, Ky., and will equip a repair shop. E. G. Peterson is manager.

B. S. Oldham, Murfreesboro, Tenn., has the contract for the erection of a 210-foot steel bridge over Stones river, Kentucky. The contract was awarded by the owner of the Nashville and Murfreesboro turnpike.

The Meacham Contracting Co., Hopkinsville, Ky., has the contract for the erection of a steel bridge, with concrete piers, over Mill creek, near Nashville, Tenn. It will be 150 feet long.

The Triumph Electric Co., Oakley, Cincinnati, O., has just sold two 25-horsepower, two 50-horsepower and one 60-horsepower reversing planer motors to the Lima Locomotive Corporation, Lima, O.

The McVey Mfg. Co., Dayton, O., has been incorporated to manufacture automobile accessories, machines and mechanical appliances, with a capital stock of $60,000. The incorporators are: J. L. McVey, Walter C. Fraine, A. N. Burkhart and R. J. McCarty.

According to an announcement by Lewis Nixon, president of the American Steel Package Co., New York, that company will locate a plant in Pittsburgh. The company will manufacture steel barrels, steel boxes, crates and other steel packages.

The Howard Shipyard & Dock Co., Jeffersonville, Ind., which recently was formed to take over the Howard shipyards, has issued bonds for $800,000. The proceeds of the issue will be used in enlarging and improving the plant, especially that part devoted to the manufacture of steel hull vessels.

A factory for the manufacture of a furniture specialty will be established in Evansville, Ind., by the Faultless Caster Co. Clifford, Shopbell & Co. have plans for the factory buildings, which will cost $25,000. Address the Evansville Business Association.

New Haven, Conn., investors are to reopen the so-called "old wringer shop" in Middlefield, Conn., which has been closed for 20 years, and will engage in the manufacture of small hardware, including nail pullers, can openers and safety razors. About 75 men will be given employment.

The Hartford, Ct., board of trade is endeavoring to induce the Ford Motor Car Co., Detroit, to erect a sub-factory in Hartford when it puts into operation its recently adopted policy of establishing a chain of sub-factories throughout the country for the purpose of assembling cars.

The Central Railroad of New Jersey has issued plans for a six span steel bridge over the Raritan river near Bound Brook, N. J., which will require from 300 to 400 tons of steel. This bridge is being erected in connection with the construction of the new plant of the Johns-Manville Co. at that point.

Negotiations are reported to be pending for the purchase of the plant of the New Castle Forge & Bolt Co., New Castle, Pa., by the New Castle Iron & Steel Co. The latter company is planning to manufacture cars and, if the deal is closed, the buildings thus acquired will be remodeled for that purpose.

The Kelley Motor Truck Co., Springfield, O., has been re-incor-

porated to be known as the Kelly-Springfield Motor Truck Co., with a capital stock of $2,500,000. The incorporators are: James W. Carroll, G. W. Patterson, Herbert B. Bradshaw, Walter E. R. Bock and L. W. Frost.

The American Locomotive Co. reports the receipt of an order for one four-wheel saddle tank locomotive from the Detroit Iron & Steel Co. The Pittsburgh Steel Co. has also ordered one six-wheel switching locomotive from the same builder.

The Marine Welding Co., Buffalo, which was recently incorporated, advises that it has taken over the General Welding Co., and that it will do electric and oxy-acetylene welding, principally in the line of repair work for steamboats. While all its plans have not been definitely made, it is the intention of the company to extend its equipment considerably.

The Sta-Rite Engine Co., LaCrosse, Wis., formerly the Parker Engine Co., Racine, Wis., is preparing to increase its capacity early next year. The present output is 20 gasoline engines per day and the concern is rushed with orders. More than 150 men are employed. The plans are said to contemplate the erection of an entirely new plant.

The Silberzahn Gas Engine Co., Toledo, O., advises that it proposes to manufacture, in larger quantities than heretofore, small gas engines which were manufactured by the Toledo Gas Engine Works. The company's plans for the extent of its output are not complete. The company is an Ohio corporation, organized with a capital stock of $10,000. It has satisfactory arrangements as to a building and the present equipment will not be added to for some time.

The Electrical Utilities Co., Ltd., recently organized with a fully paid up capital of $40,000, to be increased to $50,000, advises that it will manufacture a full line of telephones, telephone appliances, small motors, fans, and electrical utilities in general. The plant will consist of a fully equipped machine shop, brass foundry, iron foundry, electric plating and woodworking departments. The factory, about completed, is at New Hamburg, Ont., and the company's headquarters will be at Toronto. Directors and officers are as follows: President, James Fowler; secretary, R. F. Smith, A. L. Marsh, J. A. Macdonald and C. J. Hamlin.

The C. O. Bartlett & Snow Co. of Canada, Ltd., has been granted a Dominion charter to deal in, manufacture and install elevating and conveying machinery, power transmission machinery, engines, boilers, hoisting machinery, brick machinery, garbage reduction and distribution machinery, paint machinery, grain and cereal machinery and to carry on a general line of engineering, manufacturing and construction work. The head office of the company has been opened at 282 St. Catherine street, Montreal, with Herbert S. Hersey general manager. This company is the outgrowth of the extensive Canadian business of the C. O. Bartlett & Snow Co., Cleveland, and, although the connection between the Ohio company and the Canadian company will be very close for some time, the organization and management are entirely independent.

The Mannesmann Tube Works, Dusseldorf, Germany, has just issued a report, showing that the increase in profits over the preceding year is due to increased turnover and reduced cost of production. It discloses a net profit of $1,205,000 against $912,000 last year, and proposes a dividend of 13½ per cent, against 12½ per cent. The present capital is $7,855,000, against $7,140,000. It gives the turnover of the German works of the concern as $12,500,000, against $11,000,000, and that of the whole group of Mannesmann companies, both in Germany and abroad as $22,825,000, against $17,-100,000. The outlook is considered satisfactory. At the beginning of the present financial year the orders on the books amounted to 95,770 tons, against 40,529 tons last year. The profits for the year have not been affected by the better prices which have been prevalent for the past few months, but those of the current year will benefit.

The reorganization of the Platt Iron Works Co., Dayton, O., is completed. The new company took over all the physical assets as well as the inventory and accounts receivable from the trustees on Sept. 30. It starts in business not only free of all floating indebtedness, but with a working capital of $700,000 as well. The new company is a Maine corporation, capitalized as follows: Preferred and common stock, $1,100,000 each; six per cent 20-year gold bonds, $700,000. The board of directors includes: Waddill Catchings, chairman, president of the Central Foundry Co., New York; Geo. W. Davison, vice president of the Central Trust Co., New York; Albert Rathbone, of Joline, Larkin & Rathbone, attorneys, New York; E. F. Platt, vice president and treasurer of the company, Dayton; J. B. Reichmann, president, Dayton. The officers are: President, J. B. Reichmann; vice president and treasurer, E. F. Platt; vice president, J. F. Hartlieb; secretary, John Sturgess. The entire organization, including the engineering force, superintendents and foremen in the productio department, has bee kept intact. Betterments and improvements of upwards $50,000 are now under construction. These improvements will greatly increase the capacity of the plant and materially facilitate the handling of orders.

Financial

The Muncie Foundry & Machine Co., Muncie, Ind., has increased its capital stock to $50,000.

The Buckeye Motor & Cycle Co., Akron, O., has increased its capital stock from $5,000 to $15,000.

The Stewart Machinery Co., Hammond, Ind., has gone into receivership. Assets are placed at $40,000. Liabilities are not given.

The Livermore Foundry & Machine Co., Memphis, Tenn., has been placed in the hands of a receiver. The embarrassment is thought to be only temporary. Assets are estimated at about $239,000, and liabilities at $77,-500. The shops will continue operations.

Trade Notes

The Clyde Iron Works, Duluth, Minn., has leased two floors of a three-story building at 414-16 Carondelet street, New Orleans.

The Spencer Wire Co., Worcester, Mass., has bought a 15,000-foot tract of land, adjoining its property on Jacques street. It will be used for yard and storage purposes.

Among sales made in the Pittsburgh market last week were the following: Wheeling Sheet & Tin Plate Co., Wheeling, W. Va., $30,000 worth of cranes; American Vanadium Co., Pittsburgh, $6,000 worth of cranes, and Carbon Steel Co., Pittsburgh, one 15-ton Shaw crane.

The Lansing Co., Lansing, Mich., has completed arrangements with the Northwestern Steel & Iron Co., Eau Claire, Wis., to take its entire output of concrete mixing machinery and accessories. The Northwestern company makes a complete line of concrete mixing machinery and accessories.

Fires

Slight damage was done by fire recently to the plant of the York Nail & Tack Co., York, Pa.

Damage estimated at $50,000 was caused by fire to the car repair shops of the Des Moines City Railway Co., Des Moines, Ia., recently.